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      Set   Items   Description
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? E AU=BROWNLIE, JOHN

Ref    Items  Index-term
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E2         1  AU=BROWNLIE, JOEL
E3         5 *AU=BROWNLIE, JOHN
E4         6  AU=BROWNLIE, JOHN D
E5         3  AU=BROWNLIE, JOHN D.
E6         3  AU=BROWNLIE, JOHN DAVID
E7         1  AU=BROWNLIE, JOSHUA LOCKHART
E8         3  AU=BROWNLIE, K.
E9         2  AU=BROWNLIE, KATHERINE C
E10        1  AU=BROWNLIE, KENNETH G
E11        1  AU=BROWNLIE, KENNETH SAMUEL LOGAN
E12        3  AU=BROWNLIE, L

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                6  AU=BROWNLIE, JOHN D
                3  AU=BROWNLIE, JOHN D.
                3  AU=BROWNLIE, JOHN DAVID
                1  AU=BROWNLIE, JOSHUA LOCKHART
                3  AU=BROWNLIE, K.
                2  AU=BROWNLIE, KATHERINE C
                1  AU=BROWNLIE, KENNETH G
                1  AU=BROWNLIE, KENNETH SAMUEL LOGAN
                3  AU=BROWNLIE, L
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? S S1 AND STREP?
               99  S1
          1478388  STREP?
      S2        3  S1 AND STREP?
? T S2/3,K/1-3
>>>KWIC option is not available in file(s): 399

 2/3,K/1     (Item 1 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)
(c) 2010 American Chemical Society. All rts. reserv.

  151418689     CA: 151(19)418689b     JOURNAL
  Strain typing of Mycoplasma cynos isolates from dogs with respiratory
  disease
  AUTHOR(S): Mannering, Sally A.; McAuliffe, Laura; Lawes, Joanna R.;
Erles, Kerstin; Brownlie, Joe
  LOCATION: The Royal Veterinary College, Hatfield, UK, AL9 7TA
  JOURNAL: Vet. Microbiol. (Veterinary Microbiology)  DATE: 2009  VOLUME:
135  NUMBER: 3-4  PAGES: 292-296  CODEN: VMICDQ  ISSN: 0378-1135
  PUBLISHER ITEM IDENTIFIER: 0378-1135(08)00434-3  LANGUAGE: English
  PUBLISHER: Elsevier B.V.


 2/3,K/2     (Item 2 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)
(c) 2010 American Chemical Society. All rts. reserv.

  150537888     CA: 150(25)537888e     PATENT
  Vaccine comprising recombinant NS3 and recombinant E2 proteins against
```

pestivirus infection
INVENTOR(AUTHOR): Brownlie, Joe; Collins, Margaret; Thomas, Carole; Thompson, Ian
LOCATION: Switz.
ASSIGNEE: Novartis AG; Royal Veterinary College
PATENT: PCT International ; WO 200956541 A1 DATE: 20090507
APPLICATION: WO 2008EP64601 (20081028) *EP 2007119742 (20071031)
PAGES: 41pp. CODEN: PIXXD2 LANGUAGE: English
PATENT CLASSIFICATIONS:
IPCR/8 + Level Value Position Status Version Action Source Office:
A61K-0039/12 A I F B 20060101 H EP
DESIGNATED COUNTRIES: AE; AG; AL; AM; AO; AT; AU; AZ; BA; BB; BG; BH; BR; BW; BY; BZ; CA; CH; CN; CO; CR; CU; CZ; DE; DK; DM; DO; DZ; EC; EE; EG; ES; FI; GB; GD; GE; GH; GM; GT; HN; HR; HU; ID; IL; IN; IS; JP; KE; KG; KM; KN; KP; KR; KZ; LA; LC; LK; LR; LS; LT; LU; LY; MA; MD; ME; MG; MK; MN; MW; MX; MY; MZ; NA; NG; NI; NO; NZ; OM; PG; PH; PL; PT; RO; RS; RU; SC; SD; SE; SG; SK; SL; SM; ST; SV; SY; TJ; TM; TN; TR DESIGNATED REGIONAL: AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HR; HU; IE; IS; IT; LT; LU; LV; MC; MT; NL; NO; PL; PT; RO; SE; SI; SK; TR; BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW; ML; MR; NE; SN; TD; TG; BW; GH; GM; KE; LS; MW; MZ; NA; SD; SL; SZ; TZ; UG; ZM; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM

2/3,K/3 (Item 3 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)

142133045 CA: 142(8)133045r PATENT
Vaccines comprising attenuated viruses and bacteria or antigen-encoding nucleic acids and antibodies for treating canine infectious respiratory disease
INVENTOR(AUTHOR): Brownlie, John; Chalker, Victoria Jane; Erles, Kerstin
LOCATION: UK,
ASSIGNEE: The Royal Veterinary College
PATENT: PCT International ; WO 200502618 A1 DATE: 20050113
APPLICATION: WO 2004GB2865 (20040701) *GB 200315323 (20030701)
PAGES: 102 pp. CODEN: PIXXD2 LANGUAGE: English
PATENT CLASSIFICATIONS:
CLASS: A61K-039/118A; A61K-039/09B; A61K-039/02B; A61K-039/295B; G01N-033/569B; A61P-031/04B; A61P-031/12B; C07K-016/12B
DESIGNATED COUNTRIES: AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BW; BY; BZ; CA; CH; CN; CO; CR; CU; CZ; DE; DK; DM; DZ; EC; EE; EG; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; MZ; NA; NI; NO; NZ; OM; PG; PH; PL; PT; RO; RU; SC; SD; SE; SG; SK; SL; SY; TJ; TM; TN; TR; TT; TZ; UA; UG; US; UZ; VC; VN; YU; ZA; ZM; ZW DESIGNATED REGIONAL: BW; GH; GM; KE; LS; MW; MZ; NA; SD; SL; SZ; TZ; UG; ZM; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM; AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IT; LU; MC; NL; PL; PT; RO; SE; SI; SK; TR; BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW; ML; MR; NE; SN; TD; TG
? E AU=CHALKER, VICTORIA

Ref	Items	Index-term
E1	1	AU=CHALKER, V.J.
E2	1	AU=CHALKER, VICKI
E3	3	*AU=CHALKER, VICTORIA
E4	7	AU=CHALKER, VICTORIA J
E5	12	AU=CHALKER, VICTORIA J.
E6	2	AU=CHALKER, VICTORIA JANE
E7	22	AU=CHALKER, VJ
E8	2	AU=CHALKER, VJ*
E9	1	AU=CHALKER, W R.
E10	4	AU=CHALKER, W.R.

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E11         1  AU=CHALKER, WILLIAM H.
E12         1  AU=CHALKER, WILLIAM R.

           Enter P or PAGE for more
? S E1-E12
                1  AU=CHALKER, V.J.
                1  AU=CHALKER, VICKI
                3  AU=CHALKER, VICTORIA
                7  AU=CHALKER, VICTORIA J
               12  AU=CHALKER, VICTORIA J.
                2  AU=CHALKER, VICTORIA JANE
               22  AU=CHALKER, VJ
                2  AU=CHALKER, VJ*
                1  AU=CHALKER, W  R.
                4  AU=CHALKER, W R.
                1  AU=CHALKER, WILLIAM H.
                1  AU=CHALKER, WILLIAM R.
       S3      57  E1-E12
? S S3 AND CANINE
               57  S3
           461160  CANINE
       S4      15  S3 AND CANINE
? T S4/3,K/1-15
>>>KWIC option is not available in file(s): 399

 4/3,K/1     (Item 1 from file: 24)
DIALOG(R)File  24:CSA Life Sciences Abstracts
(c) 2010 CSA. All rts. reserv.

0003297389        IP ACCESSION NO: 8338326
Short communication: Serological evidence of Mycoplasma cynos infection in
canine infectious respiratory disease

Rycroft, Andrew N;  Tsounakou, Elizabeth;  Chalker, Victoria
Department of Pathology & Infectious Diseases, Royal Veterinary College,
Hawkshead Lane, North Mymms, Herts AL9 7TA, United Kingdom,
[mailto:arycroft@vc.ac.uk]

Veterinary Microbiology, v 120, n 3-4, p 358-362, March 2007
PUBLICATION DATE: 2007

PUBLISHER: Elsevier Science, P.O. Box 211 Amsterdam 1000 AE Netherlands,
[mailto:nlinfo-f@elsevier.nl], [URL:http://www.elsevier.nl/]

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 0378-1135
FILE SEGMENT: Bacteriology Abstracts (Microbiology B)
Short communication: Serological evidence of Mycoplasma cynos infection in
canine infectious respiratory disease

Rycroft, Andrew N;  Tsounakou, Elizabeth;  Chalker, Victoria


ABSTRACT:
...  for vacation or re-homing. The role of Mycoplasma cynos as an
initiating agent in canine infectious respiratory disease was
invsestigated by examining the serological response of dogs to this organism
...
```

4/3,K/2 (Item 2 from file: 24)
DIALOG(R)File 24:CSA Life Sciences Abstracts

0002576697 IP ACCESSION NO: 5876267
Taxonomy of the canine Mollicutes by 16S rRNA gene and 16S/23S rRNA intergenic spacer region sequence comparison

Chalker, VJ; Brownlie, J
Health Protection Agency, 61 Colindale Avenue, London NW9 5HT, UK, [mailto:vicki.chalker@hpa.org.uk]

International Journal of Systematic and Evolutionary Microbiology, v 54, n 2, p 537-542, March 2004
PUBLICATION DATE: 2004

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 1466-5026
FILE SEGMENT: Bacteriology Abstracts (Microbiology B)

Taxonomy of the canine Mollicutes by 16S rRNA gene and 16S/23S rRNA intergenic spacer region sequence comparison

Chalker, VJ; Brownlie, J

ABSTRACT:
The taxonomy of canine Mollicutes is described, based on phylogenetic analysis of 16S rRNA gene and 16S/23S rRNA...

...Mycoplasma strains, HRC 689 and VJC 358, were found to be distinct from all known canine mycoplasmas and all published mycoplasma 16S rRNA gene sequences.

4/3,K/3 (Item 3 from file: 24)
DIALOG(R)File 24:CSA Life Sciences Abstracts

0002494140 IP ACCESSION NO: 5666363
The association of Streptococcus equi subsp. zooepidemicus with canine infectious respiratory disease

Chalker, VJ; Brooks, HW; Brownlie, J
Department of Pathology and Infectious Diseases, Royal Veterinary College, University of London, Hawkshead Lane, North Mymms, Hertfordshire AL9 7TA, UK, [mailto:vchalker@vc.ac.uk]

Veterinary Microbiology, v 95, n 1-2, p 149-156, August 2003
PUBLICATION DATE: 2003

PUBLISHER: Elsevier Science B.V., P.O. Box 211 Amsterdam 1000 AE Netherlands, [mailto:nlinfo-f@elsevier.nl], [URL:http://www.elsevier.nl/]

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 0378-1135
FILE SEGMENT: Bacteriology Abstracts (Microbiology B)

The association of Streptococcus equi subsp. zooepidemicus with canine infectious respiratory disease

Chalker, VJ; Brooks, HW; Brownlie, J

ABSTRACT:
Canine infectious respiratory disease (CIRD) is a multi-factorial infection that affects many kennelled dogs despite...

4/3,K/4 (Item 4 from file: 24)
DIALOG(R)File 24:CSA Life Sciences Abstracts

0002476341 IP ACCESSION NO: 5622422
Respiratory Disease in Kennelled Dogs: Serological Responses to Bordetella bronchiseptica Lipopolysaccharide Do Not Correlate with Bacterial Isolation or Clinical Respiratory Symptoms

Chalker, VJ*; Toomey, C; Opperman, S; Brooks, HW; Ibuoye, MA; Brownlie, J; Rycroft, AN
Department of Pathology & Infectious Diseases, Royal Veterinary College, University of London, Hawkshead Lane, North Mymms, Hertfordshire AL9 7TA, United Kingdom; [mailto:vchalker@vc.ac.uk]

Clinical and Diagnostic Laboratory Immunology, v 10, n 3, p 352-356, May 2003
PUBLICATION DATE: 2003

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 1071-412X
FILE SEGMENT: Immunology Abstracts; Bacteriology Abstracts (Microbiology B)
Chalker, VJ*; Toomey, C; Opperman, S; Brooks, HW; Ibuoye, MA; Brownlie, J; Rycroft, AN

ABSTRACT:
The role of Bordetella bronchiseptica in a natural outbreak of canine infectious respiratory disease was investigated both by culture and serological analysis. B. bronchiseptica was found...

4/3,K/5 (Item 1 from file: 76)
DIALOG(R)File 76:Environmental Sciences

0002108713 IP ACCESSION NO: 8338326
Short communication: Serological evidence of Mycoplasma cynos infection in canine infectious respiratory disease

Rycroft, Andrew N; Tsounakou, Elizabeth; Chalker, Victoria
Department of Pathology & Infectious Diseases, Royal Veterinary College, Hawkshead Lane, North Mymms, Herts AL9 7TA, United Kingdom; [mailto:arycroft@vc.ac.uk]

Veterinary Microbiology, v 120, n 3-4, p 358-362, March 2007
PUBLICATION DATE: 2007

PUBLISHER: Elsevier Science, P.O. Box 211 Amsterdam 1000 AE Netherlands,

[mailto:nlinfo-f@elsevier.nl], [URL:http://www.elsevier.nl/]

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 0378-1135
FILE SEGMENT: Bacteriology Abstracts (Microbiology B)
Short communication: Serological evidence of Mycoplasma cynos infection in canine infectious respiratory disease

Rycroft, Andrew N; Tsounakou, Elizabeth; Chalker, Victoria

ABSTRACT:
... for vacation or re-homing. The role of Mycoplasma cynos as an initiating agent in canine infectious respiratory disease was invesigated by examining the serological response of dogs to this organism ...

4/3,K/6 (Item 2 from file: 76)
DIALOG(R)File 76:Environmental Sciences
(c) 2010 CSA. All rts. reserv.

0001699527 IP ACCESSION NO: 5876267
Taxonomy of the canine Mollicutes by 16S rRNA gene and 16S/23S rRNA intergenic spacer region sequence comparison

Chalker, VJ; Brownlie, J
Health Protection Agency, 61 Colindale Avenue, London NW9 5HT, UK, [mailto:vicki.chalker@hpa.org.uk]

International Journal of Systematic and Evolutionary Microbiology, v 54, n 2, p 537-542, March 2004
PUBLICATION DATE: 2004

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 1466-5026
FILE SEGMENT: Bacteriology Abstracts (Microbiology B)

Taxonomy of the canine Mollicutes by 16S rRNA gene and 16S/23S rRNA intergenic spacer region sequence comparison

Chalker, VJ; Brownlie, J

ABSTRACT:
The taxonomy of canine Mollicutes is described, based on phylogenetic analysis of 16S rRNA gene and 16S/23S rRNA...

...Mycoplasma strains, HRC 689 and VJC 358, were found to be distinct from all known canine mycoplasmas and all published mycoplasma 16S rRNA gene sequences.

4/3,K/7 (Item 3 from file: 76)
DIALOG(R)File 76:Environmental Sciences
(c) 2010 CSA. All rts. reserv.

0001656849 IP ACCESSION NO: 5666363
The association of Streptococcus equi subsp. zooepidemicus with canine infectious respiratory disease

Chalker, VJ; Brooks, HW; Brownlie, J
Department of Pathology and Infectious Diseases, Royal Veterinary College, University of London, Hawkshead Lane, North Mymms, Hertfordshire AL9 7TA, UK, [mailto:vchalker@vc.ac.uk]

Veterinary Microbiology, v 95, n 1-2, p 149-156, August 2003
PUBLICATION DATE: 2003

PUBLISHER: Elsevier Science B.V., P.O. Box 211 Amsterdam 1000 AE Netherlands, [mailto:nlinfo-f@elsevier.nl], [URL:http://www.elsevier.nl/]

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 0378-1135
FILE SEGMENT: Bacteriology Abstracts (Microbiology B)
The association of Streptococcus equi subsp. zooepidemicus with canine infectious respiratory disease

Chalker, VJ; Brooks, HW; Brownlie, J

ABSTRACT:
Canine infectious respiratory disease (CIRD) is a multi-factorial infection that affects many kennelled dogs despite...

4/3,K/8 (Item 4 from file: 76)
DIALOG(R)File 76:Environmental Sciences

0001649527 IP ACCESSION NO: 5622422
Respiratory Disease in Kennelled Dogs: Serological Responses to Bordetella bronchiseptica Lipopolysaccharide Do Not Correlate with Bacterial Isolation or Clinical Respiratory Symptoms

Chalker, VJ*; Toomey, C; Opperman, S; Brooks, HW; Ibuoye, MA; Brownlie, J; Rycroft, AN
Department of Pathology & Infectious Diseases, Royal Veterinary College, University of London, Hawkshead Lane, North Mymms, Hertfordshire AL9 7TA, United Kingdom, [mailto:vchalker@vc.ac.uk]

Clinical and Diagnostic Laboratory Immunology, v 10, n 3, p 352-356, May 2003
PUBLICATION DATE: 2003

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 1071-412X
FILE SEGMENT: Bacteriology Abstracts (Microbiology B)
Chalker, VJ*; Toomey, C; Opperman, S; Brooks, HW; Ibuoye, MA; Brownlie, J; Rycroft, AN

ABSTRACT:
The role of Bordetella bronchiseptica in a natural outbreak of

canine infectious respiratory disease was invesitigated both by culture and serological analysis. B. bronchiseptica was found...

4/3,K/9 (Item 1 from file: 98)
DIALOG(R)File 98:General Sci Abs

5765273 H.W. WILSON RECORD NUMBER: BGSA04252959
Mycoplasmas associated with canine infectious respiratory disease
Chalker, Victoria J
Owen, Wanda M. A; Paterson, Caren
Microbiology v. 150 pt10 (October 2004) p. 3491-7
DOCUMENT TYPE: Feature Article
SPECIAL FEATURES: Bibliography Graph Illustration Table ISSN: 1350-0872
LANGUAGE: English
COUNTRY OF PUBLICATION: United Kingdom

Mycoplasmas associated with canine infectious respiratory disease
Chalker, Victoria J

4/3,K/10 (Item 1 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)

142133045 CA: 142(8)133045r PATENT
Vaccines comprising attenuated viruses and bacteria or antigen-encoding nucleic acids and antibodies for treating canine infectious respiratory disease
INVENTOR(AUTHOR): Brownlie, John; Chalker, Victoria Jane; Erles, Kerstin
LOCATION: UK,
ASSIGNEE: The Royal Veterinary College
PATENT: PCT International ; WO 200502618 A1 DATE: 20050113
APPLICATION: WO 2004GB2865 (20040701) *GB 200315323 (20030701)
PAGES: 102 pp. CODEN: PIXXD2 LANGUAGE: English
PATENT CLASSIFICATIONS:
CLASS: A61K-039/118A; A61K-039/09B; A61K-039/02B; A61K-039/295B; G01N-033/569B; A61P-031/04B; A61P-031/12B; C07K-016/12B
DESIGNATED COUNTRIES: AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BW; BY; BZ; CA; CH; CN; CO; CR; CU; CZ; DE; DK; DM; DZ; EC; EE; EG; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; MZ; NA; NI; NO; NZ; OM; PG; PH; PL; PT; RO; RU; SC; SD; SE; SG; SK; SL; SY; TJ; TM; TN; TR; TT; TZ; UA; UG; US; UZ; VC; VN; YU; ZA; ZM; ZW DESIGNATED REGIONAL: BW; GH; GM; KE; LS; MW; MZ; NA; SD; SL; SZ; TZ; UG; ZM; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM; AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IT; LU; MC; NL; PL; PT; RO; SE; SI; SK; TR; BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW; ML; MR; NE; SN; TD; TG

4/3,K/11 (Item 2 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)

142130661 CA: 142(8)130661c JOURNAL
Mycoplasmas associated with canine infectious respiratory disease
AUTHOR(S): Chalker, Victoria J.; Owen, Wanda M. A.; Paterson, Caren; Barker, Emily; Brooks, Harriet; Rycroft, Andrew N.; Brownlie, Joe
LOCATION: Department of Pathology and Infectious Diseases, Royal Veterinary College (RVC), University of London, North Mymms, UK, AL9 7TA
JOURNAL: Microbiology (Reading, U. K.) (Microbiology (Reading, United Kingdom)) DATE: 2004 VOLUME: 150 NUMBER: 10 PAGES: 3491-3497 CODEN:

MROBEO ISSN: 1350-0872 LANGUAGE: English PUBLISHER: Society for General Microbiology

4/3,K/12 (Item 3 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)
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141153654 CA: 141(10)153654w JOURNAL
Taxonomy of the canine Mollicutes by 16S rRNA gene and 16S/23S rRNA intergenic spacer region sequence comparison
AUTHOR(S): Chalker, Victoria J.; Brownlie, Joe
LOCATION: Department of Pathology and Infectious Diseases, Royal Veterinary College, Hertfordshire, UK, AL9 7TA
JOURNAL: Int. J. Syst. Evol. Microbiol. (International Journal of Systematic and Evolutionary Microbiology) DATE: 2004 VOLUME: 54 NUMBER: 2 PAGES: 537-542 CODEN: ISEMF5 ISSN: 1466-5026 LANGUAGE: English
PUBLISHER: Society for General Microbiology

4/3,K/13 (Item 4 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)
(c) 2010 American Chemical Society. All rts. reserv.

140162357 CA: 140(11)162357h PATENT
Canine respiratory coronavirus (CRCV) spike protein, polymerase and haemagglutinin/esterase gene and use thereof in diagnosis of and vaccine preparation against canine infectious respiratory disease
INVENTOR(AUTHOR): Brownlie, John; Chalker, Victoria Jane; Erles, Kerstin
LOCATION: UK,
ASSIGNEE: The Royal Veterinary College
PATENT: PCT International ; WO 200411651 A1 DATE: 20040205
APPLICATION: WO 2003GB2832 (20030701) *GB 200217434 (20020727)
PAGES: 150 pp. CODEN: PIXXD2 LANGUAGE: English
PATENT CLASSIFICATIONS:
CLASS: C12N-015/50A; C07K-014/165B; G01N-033/50B; C12Q-001/68B; C12N-007/00B
DESIGNATED COUNTRIES: AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY; BZ; CA; CH; CN; CO; CR; CU; CZ; DE; DK; DM; DZ; EC; EE; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; MZ; NI; NO; NZ; OM; PG; PH; PL; PT; RO; RU; SC; SD; SE; SG; SK; SL; SY; TJ; TM; TN; TR; TT; TZ; UA; UG; US; UZ; VC; VN; YU; ZA; ZM; ZW; AM; AZ; BY; KG; KZ; MD; RU DESIGNATED REGIONAL: GH; GM; KE; LS; MW; MZ; SD; SL; SZ; TZ; UG; ZM; ZW; AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IT; LU; MC; NL; PT; RO; SE; SI; SK; TR; BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW; ML; MR; NE; SN; TD; TG

4/3,K/14 (Item 1 from file: 149)
DIALOG(R)File 149:TGG Health&Wellness DB(SM)
(c) 2010 Gale/Cengage. All rts. reserv.

03194502 SUPPLIER NUMBER: 161189361 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Serological evidence of Mycoplasma cynos infection in canine infectious respiratory disease.(Author abstract)
Rycroft, Andrew N.; Tsounakou, Elizabeth; Chalker, Victoria
Veterinary Microbiology, 120, 3-4, 358(5)
March 10,
2007
DOCUMENT TYPE: Author abstract PUBLICATION FORMAT: Magazine/Journal
ISSN: 0378-1135 LANGUAGE: English RECORD TYPE: Abstract
TARGET AUDIENCE: Academic

Serological evidence of Mycoplasma cynos infection in canine
infectious respiratory disease.(Author abstract)
...Chalker, Victoria

...AUTHOR ABSTRACT: for vacation or re-homing. The role of Mycoplasma
cynos as an initiating agent in canine infectious respiratory disease
was investigated by examining the serological response of dogs to this
organism..

4/3,K/15 (Item 2 from file: 149)
DIALOG(R)File 149:TGG Health&Wellness DB(SM)

02491832 SUPPLIER NUMBER: 124008016 (USE FORMAT 7 OR 9 FOR FULL TEXT
)
Mycoplasmas associated with canine infectious respiratory
disease.(Author Abstract)
Chalker, Victoria J.; Owen, Wanda M.A.; Paterson, Caren; Barker,
Emily; Brooks, Harriet; Rycroft, Andrew N.; Brownlie, Joe
Microbiology, 150, 10, 3491(7)
Oct,
2004
DOCUMENT TYPE: Author Abstract PUBLICATION FORMAT: Magazine/Journal;
Refereed ISSN: 1350-0872 LANGUAGE: English RECORD TYPE: Abstract
TARGET AUDIENCE: Academic

Mycoplasmas associated with canine infectious respiratory
disease.(Author Abstract)
Chalker, Victoria J...

AUTHOR ABSTRACT: Canine infectious respiratory disease (CIRD) is a
complex infection that occurs worldwide predominantly in kennelled dogs...
? E AU=ERLES, KRISTIN

Ref	Items	Index-term
E1	19	AU=ERLES, KERSTIN
E2	2	AU=ERLES, KERSTIN E-MAIL: KERLES@RVC.AC.UK
E3	0	*AU=ERLES, KRISTIN
E4	1	AU=ERLES, N.
E5	2	AU=ERLESAND L
E6	13	AU=ERLESAND U
E7	1	AU=ERLESAND, L
E8	2	AU=ERLESAND, L.
E9	1	AU=ERLESAND, LENNART
E10	2	AU=ERLESAND, U
E11	21	AU=ERLESAND, U.
E12	1	AU=ERLESAND, ULF

Enter P or PAGE for more
? S E1-E12

19	AU=ERLES, KERSTIN
2	AU=ERLES, KERSTIN E-MAIL: KERLES@RVC.AC.UK
0	AU=ERLES, KRISTIN
1	AU=ERLES, N.
2	AU=ERLESAND L
13	AU=ERLESAND U
1	AU=ERLESAND, L
2	AU=ERLESAND, L.
1	AU=ERLESAND, LENNART
2	AU=ERLESAND, U
21	AU=ERLESAND, U.

```
                1  AU=ERLESAND, ULF
      S5       65  E1-E12
? S S5 AND STREP?
                65  S5
           1478388  STREP?
      S6         2  S5 AND STREP?
? T S6/3,K/1-2
>>>KWIC option is not available in file(s): 399

 6/3,K/1     (Item 1 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)
(c) 2010 American Chemical Society. All rts. reserv.

  151418689    CA: 151(19)418689b    JOURNAL
  Strain typing of Mycoplasma cynos isolates from dogs with respiratory
  disease
  AUTHOR(S): Mannering, Sally A.; McAuliffe, Laura; Lawes, Joanna R.;
Erles, Kerstin; Brownlie, Joe
  LOCATION: The Royal Veterinary College, Hatfield, UK, AL9 7TA
  JOURNAL: Vet. Microbiol. (Veterinary Microbiology)  DATE: 2009  VOLUME:
135  NUMBER: 3-4  PAGES: 292-296  CODEN: VMICDQ  ISSN: 0378-1135
  PUBLISHER ITEM IDENTIFIER: 0378-1135(08)00434-3  LANGUAGE: English
  PUBLISHER: Elsevier B.V.


 6/3,K/2     (Item 2 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)
(c) 2010 American Chemical Society. All rts. reserv.

  142133045    CA: 142(8)133045r     PATENT
  Vaccines comprising attenuated viruses and bacteria or antigen-encoding
  nucleic acids and antibodies for treating canine infectious respiratory
  disease
  INVENTOR(AUTHOR): Brownlie, John; Chalker, Victoria Jane; Erles, Kerstin
  LOCATION: UK,
  ASSIGNEE: The Royal Veterinary College
  PATENT: PCT International ; WO 200502618 A1  DATE: 20050113
  APPLICATION: WO 2004GB2865 (20040701) *GB 200315323 (20030701)
  PAGES: 102 pp.  CODEN: PIXXD2  LANGUAGE: English
  PATENT CLASSIFICATIONS:
    CLASS:  A61K-039/118A; A61K-039/09B; A61K-039/02B; A61K-039/295B;
G01N-033/569B; A61P-031/04B; A61P-031/12B; C07K-016/12B
  DESIGNATED COUNTRIES: AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BW; BY;
BZ; CA; CH; CN; CO; CR; CU; CZ; DE; DK; DM; DZ; EC; EE; EG; ES; FI; GB; GD;
GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS;
LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; MZ; NA; NI; NO; NZ; OM; PG; PH; PL;
PT; RO; RU; SC; SD; SE; SG; SK; SL; SY; TJ; TM; TN; TR; TT; TZ; UA; UG; US;
UZ; VC; VN; YU; ZA; ZM; ZW  DESIGNATED REGIONAL: BW; GH; GM; KE; LS; MW; MZ
; NA; SD; SL; SZ; TZ; UG; ZM; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM; AT;
BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IT; LU; MC; NL;
PL; PT; RO; SE; SI; SK; TR; BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW; ML; MR;
NE; SN; TD; TG
? S ((ZOOEPIDEMICUS AND STREP?) OR (MYCOPLASMA)) AND (ANIMAL OR CANINE OR DOG OR
PUP?)
Processing
Processed  10 of  52 files ...
Processing
Processed  40 of  52 files ...
Completed processing all files
            4661  ZOOEPIDEMICUS
         1478388  STREP?
          145100  MYCOPLASMA
        14646914  ANIMAL
```

```
          461160  CANINE
         1035484  DOG
          530423  PUP?
      S7   22815  ((ZOOEPIDEMICUS AND STREP?) OR (MYCOPLASMA)) AND (ANIMAL
                  OR CANINE OR DOG OR PUP?)
? S S7 AND (RESPONSE OR INTRA? OR INOCCUL? OR INJECT? OR IMMUNIZ? OR ADMINS?)
Processing
Processed  10 of  52 files ...
Processing
Processing
Processed  20 of  52 files ...
Processing
Processed  40 of  52 files ...
Completed processing all files
           22815  S7
        14256283  RESPONSE
        12347517  INTRA?
         1064875  INOCCUL?
         5017121  INJECT?
          955945  IMMUNIZ?
            8302  ADMINS?
      S8    6994  S7 AND (RESPONSE OR INTRA? OR INOCCUL? OR INJECT? OR
                  IMMUNIZ? OR ADMINS?)
? S S8 AND (INACTIV? OR ATTENUAT? OR WEAK?)
Processing
Processed  40 of  52 files ...
Completed processing all files
            6994  S8
         1755628  INACTIV?
         1740646  ATTENUAT?
         2959521  WEAK?
      S9     843  S8 AND (INACTIV? OR ATTENUAT? OR WEAK?)
? RD

>>>Duplicate detection is not supported for File 393.

>>>Duplicate detection is not supported for File 391.

>>>Records from unsupported files will be retained in the RD set.
Processing - Examined 800 records
     S10     517  RD (unique items)
? S S10 AND (ZOOEPIDEMICUS OR CYNOS)
             517  S10
            4661  ZOOEPIDEMICUS
             198  CYNOS
     S11      22  S10 AND (ZOOEPIDEMICUS OR CYNOS)
? RD

>>>Duplicate detection is not supported for File 393.

>>>Duplicate detection is not supported for File 391.

>>>Records from unsupported files will be retained in the RD set.
     S12      22  RD (unique items)
? T S12/3,K/1-22
>>>KWIC option is not available in file(s): 399

 12/3,K/1     (Item 1 from file: 24)
DIALOG(R)File  24:CSA Life Sciences Abstracts
(c) 2010 CSA. All rts. reserv.

0004091946       IP ACCESSION NO: 12562591
Investigations into a rationally designed modified live vaccine for equine
```

strangles.

Borst, Luke B

, Suppl. B, v 70, n 06, p 202 p., 20090000
PUBLICATION DATE: 2009

DOCUMENT TYPE: Book Monograph
RECORD TYPE: Abstract
LANGUAGE: English
ISBN: 9781109222883
FILE SEGMENT: Bacteriology Abstracts (Microbiology B); Immunology Abstracts

ABSTRACT:
... properties of a disease that could be controlled or even eradicated. The agent of strangles Streptococcus equi ssp. equi has a very narrow host range, infecting Equidae almost exclusively. The majority...

...the currently available modified live vaccine strain for safety, efficacy and the molecular mechanism of attenuation. First we performed a simple safety and efficacy study in ponies using the Pinnacle super...

...electrophoresis and sequencing for single nucleotide polymorphisms (SNPs). To understand the molecular mechanism of relative attenuation of this strain, we interrogated the genome of this strain using comparative genomic sequencing. Using...

...10 genes will be the target of further studies. Next we developed a high throughput animal model to screen for attenuation of virulence gene deleted mutants. We showed that an intramuscular injection model using the zebrafish host was able to detect relative attenuation of gene deletion mutant strains. We confirmed these results using a comparable mammalian model: an intraperitoneal injection mouse model. Using these models we have developed a triple gene deletion mutant which will...

...During our experiments, we also noted that the zebrafish host developed a robust cellular inflammatory response to Streptococcus zooepidemicus that was not observed in infection with S. equi. Using whole genomic zebrafish expression arrays...
...increased expression of cytokines and factors important for growth and differentiation of phagocytes in fish injected with S. zoo while acute phase proteins and antimicrobial lectins were up-regulated in fish injected with S. equi.

DESCRIPTORS: Abscesses; Acute phase substances; Age; Animal models ; Antimicrobial agents; Clinical isolates; Cytokines; Deletion mutant ; Differentiation; Genomes; Host range; Immunity; Infection; Inflammation...

...Phagocytes; Pulsed-field gel electrophoresis; Single-nucleotide polymorphism; Strangles; Vaccines; Virulence; genomics; Danio rerio; Equidae; Streptococcus; Streptococcus equi

12/3,K/2 (Item 1 from file: 50)
DIALOG(R)File 50:CAB Abstracts
(c) 2010 CAB International. All rts. reserv.

0010147592 CAB Accession Number: 20103127545
Immunisation of the equine uterus against Streptococcus equi subspecies zooepidemicus using an intranasal attenuated

Salmonella vector.

Causey, R. C.; Artiushin, S. C.; Crowley, I. F.; Weber, J. A.; Homola, A. D.; Kelley, A.; Stephenson, L. A.; Opitz, H. M; Guilmain, S.; Timoney, J. F.

Author email address: robert.causey@umit.maine.edu

Department of Animal and Veterinary Sciences and the Maine Agriculture and Forestry Experiment Station, University of Maine, Orono, ME 04469-5735, USA.

Veterinary Journal vol. 184 (2): p.156-161

Publication Year: 2010

ISSN: 1090-0233

Digital Object Identifier: 10.1016/j.tvjl.2009.05.001

Publisher: Elsevier Ltd Oxford, UK

Language: English

Record Type: Abstract

Document Type: Journal article

Immunisation of the equine uterus against Streptococcus equi subspecies zooepidemicus using an intranasal attenuated Salmonella vector.

Attenuated Salmonella enterica serovar Typhimurium MGN707, expressing the SzP protective protein of the MB9 serovar of Streptococcus equi subspecies zooepidemicus (SzP-MB9) was tested for its safety and efficacy as a nebulised intranasal vaccine against streptococcal uterine infections in mares. In a preliminary study, vaccinated mares (n =5) displayed serum, nasal...

... uterine washes (P <0.05). Assuming the uteri of all nine mares were free of streptococci prior to challenge with 6.3x10 SUP 9 colony forming units of S. e. zooepidemicus MB9, significantly fewer S. e. zooepidemicus were cultured from the uterine flushings of expressor-vaccinated mares (n =4) compared to control...

...DESCRIPTORS: immunization;

...ORGANISM DESCRIPTORS: Streptococcaceae; ...

...Streptococcus; ...

...Streptococcus equi...

...Streptococcus equi subsp. zooepidemicus

...BROADER TERMS: Streptococcaceae; ...

...Streptococcus; ...

...Streptococcus equi

CABI CODES: Animal Immunology, (New March 2000) (LL650...

...Animal Reproduction and Embryology, (New March 2000) (LL250

12/3,K/3 (Item 2 from file: 50)

0009510138 CAB Accession Number: 20083092287

Efficacy of inactivated vaccine based on Streptococcus equi subsp. zooepidemicus of porcine origin against virulent challenge in mouse model.

Fan HongJie; Lu ChengPing

Author email address: fhj-68@sohu.com\lucp@mjau.edu.cn

Key Laboratory of Animal Disease Diagnostic and Immunology, Ministry of

Agriculture, Nanjing Agricultural University, Nanjing 210095, China.
Scientia Agricultura Sinica vol. 41 (2): p.613-618
Publication Year: 2008
ISSN: 0578-1752
Publisher: Editorial Department of Scientia Agricultura Sinica Beijing, China
Language: Chinese Summary Language: English
Record Type: Abstract
Document Type: Journal article

Efficacy of inactivated vaccine based on Streptococcus equi subsp. zooepidemicus of porcine origin against virulent challenge in mouse model.
[Objective] In order to evaluate the antigenic variability of Streptococcus equi subsp. zooepidemicus of pig origin isolated in different regions in China and provide a guidance for development of vaccine of Streptococcus . [Method] Groups of 12-week-old inbred ICR mice (10 mice per group) were immunized with formalin-inactivated whole bacterium cells of one of the 10 local isolates in complete Freund's adjuvant...

... in incomplete Freund's adjuvant four weeks later. Groups of vaccinated and control mice were intraperitoneally challenged with 5 LD SUB 50 homogenous strains or 1.6x10 SUP 5 CFU of heterologous ATCC35246 strain two weeks post-vaccination. [Result] The results showed that at least 90% immunized mice were protected against homogenous challenges except the immunized group of CG-74-63, and 80 or more immunized mice were protected against heterologous ATCC35246 challenge. [Conclusion] There is no significant antigenic variability among the 10 Streptococcus equi subsp. zooepidemicus isolates of pig origin, the Streptococcus vaccine made one of vaccine strain can provided enough protection.

...DESCRIPTORS: immunization; ...
...inactivated vaccines
...ORGANISM DESCRIPTORS: Streptococcus equi subsp. zooepidemicus
...BROADER TERMS: Streptococcus equi...

...Streptococcus; ...

...Streptococcaceae;
...CABI CODES: Animal Immunology, (New March 2000) (LL650

12/3,K/4 (Item 3 from file: 50)
DIALOG(R)File 50:CAB Abstracts
(c) 2010 CAB International. All rts. reserv.

0009503084 CAB Accession Number: 20083081812
IdeE reduces the bactericidal activity of equine neutrophils for Streptococcus equi .
Timoney, J. F.; Yang, J. D.; Liu, J.; Merant, C.
Author email address: jtimoney@email.uky.edu
Gluck Equine Research Center, Department of Veterinary Science, University of Kentucky, Lexington, KY 40546-0099, USA.
Veterinary Immunology and Immunopathology vol. 122 (1/2): p.76-82
Publication Year: 2008
ISSN: 0165-2427
Publisher: Elsevier Amsterdam, Netherlands
Language: English
Record Type: Abstract
Document Type: Journal article

IdeE reduces the bactericidal activity of equine neutrophils for Streptococcus equi .

Streptococcus equi (S. equi) causes equine strangles, a highly contagious and widespread purulent lymphadenitis of the...
... equi into culture medium was detected during the exponential phase of growth. The closely related Streptococcus zooepidemicus appeared to store the protein but not to release it. Antiphagocytic activity for equine neutrophils was dose-dependent and neutralized by IdeE-specific antiserum. Biotinylated IdeE bound weakly to about 77% of purified equine neutrophils and strongly to the remainder.

...DESCRIPTORS: immune response;
...ORGANISM DESCRIPTORS: Streptococcus equi
...BROADER TERMS: Streptococcus; ...

...Streptococcaceae;
CABI CODES: Animal Immunology, (New March 2000) (LL650...

12/3,K/5 (Item 4 from file: 50)
DIALOG(R)File 50:CAB Abstracts

0009146469 CAB Accession Number: 20063226491
Making sense of equine uterine infections: the many faces of physical clearance.
Causey, R. C.
Author email address: robert.causey@umit.maine.edu
Department of Animal and Veterinary Sciences, Maine Agriculture and Forestry Experiment Station, University of Maine, Orono, ME 04469-5735, USA.
Veterinary Journal vol. 172 (3): p.405-421
Publication Year: 2006
ISSN: 1090-0233
Digital Object Identifier: 10.1016/j.tvjl.2005.08.005
Publisher: Elsevier Amsterdam, Netherlands
Language: English
Record Type: Abstract
Document Type: Journal article

... oviduct and uterus leads to loss of the conceptus and mares susceptible to infection have weakened uterine defences partly due to retention of inflammatory exudate. Bacteria may trigger inflammation, resist phagocytosis...
... inflammation, and isolation of typical organisms and susceptible mares may be identified by detection of intrauterine fluid during oestrus, or at 6-48 h post-breeding. Therapy includes oxytocin, uterine lavage...

... indicate additive benefits of oxytocin and antibiotics. Improved conception rates have been associated with autologous, intrauterine plasma, despite controversy about its bactericidal efficacy. Because of the potential for endometrial damage, intrauterine antiseptics require caution.

...ORGANISM DESCRIPTORS: Streptococcus equi subsp. zooepidemicus
...BROADER TERMS: Streptococcus equi...

...Streptococcus; ...

...Streptococcaceae;

...CABICODES: Diagnosis of Animal Diseases, (New March 2000)
(LL886)

12/3,K/6 (Item 5 from file: 50)
DIALOG(R)File 50:CAB Abstracts

0007358384 CAB Accession Number: 19972206319
Diagnosis and control of streptococcal endometritis in sows.
She BoRong; Yuan Sheng; Chen Ling
Chinese Journal of Veterinary Medicine vol. 21 (10): p.17-18
Publication Year: 1995
Language: Chinese
Record Type: Abstract
Document Type: Journal article

Diagnosis and control of streptococcal endometritis in sows.

... affecting both sows (79.1%) and replacement gilts (13.2%). The disease was diagnosed as Streptococcus zooepidemicus type C infection, based on clinical manifestations, anatomical changes, bacterial culture and isolation, and biochemical...

... the same time, all the boars, sows and replacement gilts, including apparently healthy animals, were injected with an attenuated streptococcal vaccine (ST 17) and with an inactivated Streptococcus auto vaccine. In combination with other measures such as disinfection of both pens and animals...

...IDENTIFIERS: Streptococcus zooepidemicus;
...ORGANISM DESCRIPTORS: Streptococcus equi subsp. zooepidemicus
...BROADER TERMS: Streptococcus equi...

...Streptococcus; ...

...Streptococcaceae;
...CABICODES: Animal Physiology and Biochemistry (Excluding Nutrition) (LL600)

12/3,K/7 (Item 6 from file: 50)
DIALOG(R)File 50:CAB Abstracts

0007302242 CAB Accession Number: 19972200274
Study of streptococcosis in beavers.
Chen YongLin; Guang FuShi; Li QingZhen; Zhang FengYing
China National Institute for Control of Veterinary Pharmaceuticals, Beijing 100081, China.
Chinese Journal of Veterinary Medicine vol. 21 (6): p.18-20
Publication Year: 1995
Language: Chinese
Record Type: Abstract
Document Type: Journal article

Study of streptococcosis in beavers.

... Gubei Wildlife Breeding Farm, Hebei, China in 1992-94. The pathogen was confirmed to be Streptococcus zooepidemicus Group C. The disease was controlled effectively by using an inactivated vaccine, prepared from the bacterial strains isolated from the dead animals on the

farm. Type differences were observed in the S. zooepidemicus strain isolated from the beavers and those originating from pigs and sheep. The bacterium caused...

DESCRIPTORS: animal diseases...

...immunization; ...

...inactivated vaccines
...IDENTIFIERS: Streptococcus zooepidemicus
...ORGANISM DESCRIPTORS: Streptococcus equi subsp. zooepidemicus
...BROADER TERMS: Streptococcus equi...

...Streptococcus; ...

...Streptococcaceae;
CABI CODES: Biological Resources (Animal) (PP710...

12/3,K/8 (Item 7 from file: 50)
DIALOG(R)File 50:CAB Abstracts
(c) 2010 CAB International. All rts. reserv.

0007193880 CAB Accession Number: 19962205076
Characterisation of murine monoclonal antibodies recognising opsonic, mouse-protective, chaining and mucosally relevant epitopes on the M protein of Streptococcus equi subspecies equi .
Timoney, J. F.; Guan, M
Gluck Equine Research Center, Department of Veterinary Science, University of Kentucky, Lexington, Kentucky 40546-0099, USA.
Research in Veterinary Science vol. 60 (1): p.76-81
Publication Year: 1996
ISSN: 0034-5288
Language: English
Record Type: Abstract
Document Type: Journal article

... antibodies recognising opsonic, mouse-protective, chaining and mucosally relevant epitopes on the M protein of Streptococcus equi subspecies equi .

... mutanolysin extract, but did not react with recombinant M-like protein of S. equi subsp. zooepidemicus . One mAb (2A10) showed strong opsonic activity for S. equi and protected mice against an...
... other mAbs were mouse-protective but not opsonic. All the mAbs elicited a strong chaining response from S. equi , but had only a weak chaining effect on a strain of S. equi (19) that expressed only 4% of the ...

...DESCRIPTORS: immune response;
...ORGANISM DESCRIPTORS: Streptococcus equi
BROADER TERMS: Streptococcus; ...

...Streptococcaceae;
...CABI CODES: Animal Treatment and Diagnosis (Non-Drug), (Discontinued March 2000) (LL880

12/3,K/9 (Item 1 from file: 71)
DIALOG(R)File 71:ELSEVIER BIOBASE
(c) 2010 Elsevier B.V. All rts. reserv.

0000007444 SUPPLIER NUMBER: 1994027107
A comparison of the pulmonary defenses against streptococcal infection in rats and mice following O SUB 3 exposure: Differences in disease susceptibility and neutrophil recruitment
Gilmour M.I.; Selgrade M.K.
CORRESP. AUTHOR/AFFIL: Gilmour M.I., Ctr. for Env. Medicine/Lung Biology, University of North Carolina, Chapel Hill, NC, United States
Journal: Toxicology and Applied Pharmacology (TOXICOL. APPL. PHARMACOL.), v123, n2, (211-218), 1993, United States
PUBLICATION DATE: December 13, 1993 (19931213)
CODEN: TXAPA
ISSN: 0041-008X
RECORD TYPE: Abstract; New
DOCUMENT TYPE: Article
LANGUAGES: English SUMMARY LANGUAGES: English

A comparison of the pulmonary defenses against streptococcal infection in rats and mice following O SUB 3 exposure: Differences in disease susceptibility and...

...SUB 3) exposure reduces alveolar macrophage (AM) phagocytosis in mice and increases their susceptibility to Streptococcus zooepidemicus. O SUB 3 exposure also decreases AM phagocytosis in rats but does not result in...

...SUB 3 exposure (3 hr, 0.4 or 0.8 ppm) and infection with S. zooepidemicus resulted in a dose-dependent proliferation of bacteria in the lungs of mice and high...

...2 or more days postinfection and did not alter the fatal infection. In contrast, microbial inactivation was only impaired in O SUB 3 -exposed rat lungs during the first 48 hr...

...be isolated from bronchoalveolar lavage fluid between 6 and 48 hr postinfection with the peak response occurring at 24 hr. Pretreatment with anti-PMN serum eliminated the neutrophil influx and impaired further the bactericidal activity in ozone-exposed rats. The results suggest that inhaled streptococci are cleared normally from the mouse lung by AMs. Following exposure to O SUB 3...

SPECIES DESCRIPTORS:
...Streptococcus; ...

...Streptococcus equi subsp. zooepidemicus

CLASSIFICATION DESCRIPTION:
...Host defence - animal studies...

12/3,K/10 (Item 1 from file: 72)
DIALOG(R)File 72:EMBASE
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0081740291 EMBASE/Medline No: 2007174204
Canine respiratory viruses
ISSUE TITLE: Respiratory viruses of domestic animals
Buonavoglia C.; Martella V.
Department of Animal Health and Wellbeing, Faculty of Veterinary Medicine, Bari, Italy
AUTHOR EMAIL: c.buonavoglia@veterinaria.uniba.it
CORRESP. AUTHOR/AFFIL: Buonavoglia C.: Department of Animal Health and Wellbeing, Faculty of Veterinary Medicine, Bari, Italy

CORRESP. AUTHOR EMAIL: c.buonavoglia@veterinaria.uniba.it

Veterinary Research (Vet. Res.) (France) March 1, 2007, 38/2 (355-373)
CODEN: VEREE ISSN: 0928-4249 eISSN: 1297-9716
DOI: 10.1051/vetres:2006058
URL:
http://www.edpsciences.org/articles/vetres/pdf/2007/02/v06186.pdf?access=ok
DOCUMENT TYPE: Journal; Review RECORD TYPE: Abstract
LANGUAGE: English SUMMARY LANGUAGE: English
NUMBER OF REFERENCES: 173

Canine respiratory viruses

...a number of viral and bacterial pathogens have been reported as potential aetiological agents, including canine parainfluenza virus, canine adenovirus and Bordetella bronchiseptica, as well as mycoplasmas, Streptococcus equi subsp. zooepidemicus, canine herpesvirus and reovirus-1,-2 and -3. Enhancement of pathogenicity by multiple infections can result...

DRUG DESCRIPTORS:
...combination--cb; antigen--drug therapy--dt; antiinfective agent--drug therapy--dt; bactericide--drug therapy--dt; inactivated vaccine--drug therapy--dt; live vaccine--drug therapy--dt; live vaccine--intranasal drug administration--na; parainfluenza vaccine--drug combination--cb; parainfluenza vaccine--drug therapy--dt; parainfluenza vaccine...
MEDICAL DESCRIPTORS:
active immunization; Adenovirus; Adenovirus 2; bacterial infection --drug therapy--dt; Bordetella bronchiseptica; cell culture; Coronavirus; dog; drug efficacy; electron microscopy; Herpes virus; human; Influenza virus A; monotherapy; Mycoplasma; nonhuman; nose smear; Orthoreovirus; Parainfluenza virus; pathogenicity; polyacrylamide gel electrophoresis; polymerase chain reaction; Reovirus; respiratory virus; reverse transcription polymerase chain reaction; review; sequence analysis; serology; Streptococcus equi; vaccination; virus replication

12/3,K/11 (Item 1 from file: 73)
DIALOG(R)File 73:EMBASE

0073195037 EMBASE/Medline No: 1986094071
Opsonization of bacteria by uterine secretions of cyclic mares
Brown A.E.; Hansen P.J.; Asbury A.C.
Department of Reproduction, College of Veterinary Medicine, University of Florida, Gainesville, FL 32610, United States:
CORRESP. AUTHOR/AFFIL: Department of Reproduction, College of Veterinary Medicine, University of Florida, Gainesville, FL 32610, United States

American Journal of Reproductive Immunology and Microbiology (AM. J. REPROD. IMMUNOL. MICROBIOL.) (United States) December 1, 1985, 9/4 (119-123)
CODEN: AJRME ISSN: 8755-8920
DOCUMENT TYPE: Journal; Article RECORD TYPE: Abstract
LANGUAGE: English

...collected from mares before and after bacterial-induced inflammation were assayed for ability to opsonize Streptococcus zooepidemicus for phagocytosis by polymorphonuclear leukocytes. Opsonization was measured as the peak phagocytic rate of bacteria...

...on day 10 postovulation. In a second experiment, 7 x 10 SUP 9 live S. zooepidemicus were inoculated into the uterus of five mares

during estrus. Uterine flushings collected at the estrus before inoculation or at the estrus after inoculation did not opsonize bacteria. Four of five flushings collected 6 hr post inoculation, however, were capable of opsonization. Based on heat inactivation at 56(deg) C, the opsonizing activity of one of four flushes was due to a complement protein. It was concluded that one aspect of the acute inflammatory response of the mare's uterus is accumulation of opsonins in the uterine lumen.

MEDICAL DESCRIPTORS:
animal cell; blood and hemopoietic system; female genital system; horse; nonhuman; priority journal
ORIG. DESCRIPTORS:

12/3,K/12 (Item 1 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

02057997 ORDER NO: AADAA-I3159418
Characterization, immunogenicity and possible roles of Streptococcus equi linkage group I proteins in the pathogenesis of strangles
Author: Muthupalani, Sureshkumar
Degree: Ph.D.
Year: 2005
Corporate Source/Institution: University of Kentucky (0102)
Source: VOLUME 65/12-B OF DISSERTATION ABSTRACTS INTERNATIONAL. PAGE 6233. 149 PAGES
ISBN: 0-496-92530-X

Characterization, immunogenicity and possible roles of Streptococcus equi linkage group I proteins in the pathogenesis of strangles
Descriptors: BIOLOGY, VETERINARY SCIENCE ; AGRICULTURE, ANIMAL PATHOLOGY

<italic>Streptococcus equi</italic> is a highly host adapted clonal pathogen. A novel gene cluster of <italic...

...Operon 2. A similar organization of genes is also present in the commensal <italic> S. zooepidemicus</italic> but with considerable differences in the sequences of <italic>SzPSe</italic>, <italic>Se44.2...

...nasal washes recognize SzPSe, Se44.2 and Se46.8. Se73.9 and Se51.9 react weakly with serum antibodies although Se51.9 induces variable mucosal antibody responses in convalescent horses. Binding...

...that SzPSe and Se46.8 bind to equine fibrinogen and Se46.8 also has a weak affinity for fibronectin. Se44.2, Se73.9 and Se51.9 aggregated equine platelets. SzPSe, Se73...

...contribute to the complex pathogenesis of strangles as adhesins and in induction of host immune response.

12/3,K/13 (Item 1 from file: 135)
DIALOG(R)File 135:NewsRx Weekly Reports

0001796395 (USE FORMAT 7 OR 9 FOR FULLTEXT)
New findings from University of Maine in the area of Streptococcus published
Vaccine Weekly, May 26, 2010, p.11

DOCUMENT TYPE: Editor's Choice LANGUAGE: English
RECORD TYPE: FULLTEXT
WORD COUNT: 342

New findings from University of Maine in the area of Streptococcus published

...TEXT: to recent research published in the Veterinary Journal , "Attenuated Salmonella enterica serovar Typhimurium MGN707, expressing the SzP protective protein of the MB9 serovar of Streptococcus equi subspecies zooepidemicus (SzP-MB9) was tested for its safety and efficacy as a nebulised intranasal vaccine against streptococcal uterine infections in mares (see also Streptococcus). In a preliminary study, vaccinated mares (n = 5) displayed serum, nasal and uterine responses (P < 0.05) to S. Typhimurium lipopolysaccharide (St-LPS)." "Subsequently, vaccinated mares (expressor group, n = 7), but not...

...challenge with 6.3 x 10(9) colony forming units of S. e. zooepidemicus MB9, significantly fewer S. e. zooepidemicus were cultured from the uterine flushings of expressor-vaccinated mares (n = 4) compared to control-vaccinated mares (n = 5) (P < 0.001)," wrote R.C. Causey and colleagues, University of Maine. The researchers...

...zooepidemicus using an intranasal attenuated Salmonella vector. Veterinary Journal , 2010;184(2):156-161). For additional information, contact R.C. Causey, University of Maine, Dept. of Animal & Vet. Science, Orono, ME 04469, USA. The publisher's contact information for the Veterinary Journal is: Elsevier Science Ltd., the Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, Oxon, England. Keywords: City:Orono, State...

...Research This article was prepared by Vaccine Weekly editors from staff and other reports. Copyright 2010, Vaccine Weekly via NewsRx.com

...DESCRIPTORS: Enterobacteriaceae; Gammaproteobacteria; Gram-Negative Bacteria; Gram-Negative Facultatively Anaerobic Rods; Gram-Positive Cocci; Salmonella Vaccines; Streptococcaceae
SUBJECT HEADING: Streptococcus

12/3,K/14 (Item 1 from file: 357)
DIALOG(R)File 357:Derwent Biotech Res.

0258640 DBR Accession No.: 2000-13130 PATENT
Use of live attenuated bacteria in vaccines, particularly for preventing diseases in horses, by administration submucosally, avoiding severe local reactions - recombinant vaccine preparation
AUTHOR: Jacobs A A C; Goovaerts D
CORPORATE SOURCE: Arnhelm, The Netherlands.
PATENT ASSIGNEE: Akzo-Nobel 2000
PATENT NUMBER: EP 1023903 PATENT DATE: 20000802 WPI ACCESSION NO.: 2000-516028 (2047)
PRIORITY APPLIC. NO.: EP 99200202 APPLIC. DATE: 19990126
NATIONAL APPLIC. NO.: EP 2000200216 APPLIC. DATE: 20000120
LANGUAGE: English

Use of live attenuated bacteria in vaccines, particularly for preventing diseases in horses, by administration submucosally, avoiding severe local...

ABSTRACT: Use of live attenuated bacteria for making vaccines for submucosal administration. Live bacteria of the attenuated deletion mutant Streptococcus equi TW928 was formulated and administered submucosally to the lips of horses. Animals vaccinated in ...

... reactions, appeared to be in good condition and had a normal appetite. Animals given comparable intramuscular injections developed large abscesses which were persistent and continued to grow until they burst. All vaccinated animals were completely protected against the challenge. The live attenuated bacteria are particularly used to prevent infection in cattle, pigs, dogs or especially horses and specifically where caused by Streptococcus equi or Streptococcus zooepidemicus. Submucosal vaccination gives good protection with only minor local reaction. The bacteria are the horse pathogens S. equi, S. zooepidemicus, Rhodococcus equi, Corynebacterium pseudotuberculosis, Pseudomonas mallei, Actinobacillus equili and Pastuerella multocida. (17pp)
DESCRIPTORS: recombinant vaccine prep., Streptococcus equi, Streptococcus zooepidemicus, appl. horse, cattle, pig, dog Rhodococcus equi, Corynebacterium pseudotuberculosis, Pseudomonas mallei, Actinobacillus equili, Pastuerella multocida bacterium mammal animal (Vol. 19, No. 23)

12/3,K/15 (Item 2 from file: 357)
DIALOG(R)File 357:Derwent Biotech Res.
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0233979 DBR Accession No.: 99-04080 PATENT
Use of live attenuated bacterium e.g. Streptococcus equi - for production of vaccine against S. equi infection
AUTHOR: Jacobs A A C
CORPORATE SOURCE: Arnhem, The Netherlands.
PATENT ASSIGNEE: Akzo-Nobel 1999
PATENT NUMBER: EP 894500 PATENT DATE: 990203 WPI ACCESSION NO.: 99-108069 (9910)
PRIORITY APPLIC. NO.: EP 97202365 APPLIC. DATE: 970729
NATIONAL APPLIC. NO.: EP 98202512 APPLIC. DATE: 980727
LANGUAGE: English

Use of live attenuated bacterium e.g. Streptococcus equi
ABSTRACT: The use of a live attenuated Streptococcus equi bacterium in the manufacture of a vaccine against S. equi, is claimed. The attenuated virus is useful in production of a vaccine against S. equi infection, by systemic administration. Systemic administration directly stimulates the nasopharyngeal immune response obtaining a very high level of protection against strangles. The vaccine preferably also contains an adjuvant or another attenuated pathogen, or antigenic material from another pathogen, particularly Potomac fever agent, Rhodococcus equi, Clostridium tetanii, Mycobacterium pseudomallei, Streptococcus zooepidemicus, vesicular stomatitis virus, Borna-disease virus, horse influenza, African-horse-sickness virus, horse arteritis virus...
DESCRIPTORS: live attenuated Streptococcus equi, strangles vaccine prep., appl. horse vaccination bacterium animal mammal (Vol. 18, No. 8)

12/3,K/16 (Item 3 from file: 357)
DIALOG(R)File 357:Derwent Biotech Res.
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0227153 DBR Accession No.: 98-08750 PATENT
Nutria streptococcosis and pasteurellosis vaccine - Pasteurella multocida and Streptococcus zooepidemicus culture
AUTHOR: Esepenok V A; Konopatkin A A; Panin A N; Netseplyaeva L I; Gorbatova Kh S
PATENT ASSIGNEE: Esepenok V A; Konopatkin A A; Panin A N; Netseplyaeva L I; Gorbatova Kh S 1997
PATENT NUMBER: RU 2099084 PATENT DATE: 971220 WPI ACCESSION NO.: 98-375543 (9832)
PRIORITY APPLIC. NO.: RU 9437007 APPLIC. DATE: 940930
NATIONAL APPLIC. NO.: RU 9437007 APPLIC. DATE: 940930
LANGUAGE: Russian

Nutria streptococcosis and pasteurellosis vaccine - Pasteurella multocida and Streptococcus zooepidemicus culture
ABSTRACT: Pasteurella sp. and Streptococcus sp. infection in coypu (nutria) may be prevented more effectively using a divalent vaccine containing 4 strains. The vaccine is prepared by culturing Streptococcus zooepidemicus (VGNKI K-DEP, 10(9) cells/ml) and Pasteurella multocida (VGKNI 6011, 2394 and 1015...
... a medium containing glucose, formalin, 3% aluminum hydroxide solution and saponin. In an example, S. zooepidemicus and P. multocida were cultured, combined in equal quantities and inactivated with a 0.3% formalin solution. A 3% Al(OH)3 solution was then added...

...100 mg/l biomass) was added. A group of 205 nutrias received 2 i.m injections of the vaccine in 1.0 and 1.5 ml doses. After one month observation...
DESCRIPTORS: Pasteurella multocida, Streptococcus zooepidemicus cell culture appl. coypu bacterium infection vaccine fermentation nutria mammal animal (Vol.17, No.20)

12/3,K/17 (Item 4 from file: 357)
DIALOG(R)File 357:Derwent Biotech Res.

0227152 DBR Accession No.: 98-08749 PATENT
Nutria streptococcosis and pasteurellosis vaccine synthesis method - Pasteurella multocida and Streptococcus zooepidemicus cell culture
AUTHOR: Esepenok V A; Konopatkin A A; Panin A N; Netseplyaeva L I; Gorbatova Kh S
PATENT ASSIGNEE: Esepenok V A; Konopatkin A A; Panin A N; Netseplyaeva L I; Gorbatova Kh S 1997
PATENT NUMBER: RU 2099083 PATENT DATE: 971220 WPI ACCESSION NO.: 98-375542 (9832)
PRIORITY APPLIC. NO.: RU 9436646 APPLIC. DATE: 940930
NATIONAL APPLIC. NO.: RU 9436646 APPLIC. DATE: 940930
LANGUAGE: Russian

Nutria streptococcosis and pasteurellosis vaccine synthesis method - Pasteurella multocida and Streptococcus zooepidemicus cell culture
ABSTRACT: The efficiency of a combined vaccine against Streptococcus sp. and Pasteurella sp. infection in coypu can be enhanced by introducing a freezing-thawing stage into the synthesis process. Streptococcus zooepidemicus (VGNKI K-DEP) and Pasteurella multocida (VGNKI 6011, 2394 and 1015) are cultured separately for...

... medium and frozen for 2 days at -20 deg. After thawing, the liquid fraction is inactivated with 0.3-90.4% formalin solution and the 2 cultures are then combined in...

... hydroxide solution and saponin are added as adjuvants. In an example, a vaccine sample containing Streptococcus sp., and Pasteurella sp. components was frozen for 2 days at -20 deg and thawed...

... suspensions were combined and shaken with Al(OH)3 and saponin. The resultant vaccine was injected 2 times i.m into nutrias in 1.0 and 1.5 ml doses, and...

... 451 survived (98.4%), compared to a 33.3% survival figure for a control group immunized with a diplococcal septicemia preparation. (4pp)
DESCRIPTORS: Pasteurella multocida, Streptococcus zooepidemicus culture appl. coypu bacterium infection vaccine fermentation mammal animal nutria (Vol.17, No.20)

12/3,K/18 (Item 5 from file: 357)
DIALOG(R)File 357:Derwent Biotech Res.

0227150 DBR Accession No.: 98-08747 PATENT
Nutria anti-Streptococcus sp. vaccine synthesis method - Streptococcus zooepidemicus culture
AUTHOR: Esepenok V A; Konopatkin A A; Panin A N; Gorbatova Kh S
PATENT ASSIGNEE: Esepenok V A; Konopatkin A A; Panin A N; Gorbatova Kh S 1997
PATENT NUMBER: RU 2099081 PATENT DATE: 971220 WPI ACCESSION NO.: 98-375540 (9832)
PRIORITY APPLIC. NO.: RU 9436645 APPLIC. DATE: 940930
NATIONAL APPLIC. NO.: RU 9436645 APPLIC. DATE: 940930
LANGUAGE: Russian

Nutria anti-Streptococcus sp. vaccine synthesis method - Streptococcus zooepidemicus culture
ABSTRACT: The efficiency of a combined vaccine against Streptococcus sp. infection in coypu can be enhanced by introducing a bacteria destruction stage into the synthesis process. Streptococcus zooepidemicus (VGNKI K-DEP) is cultured for 18 to 24 hr at 37-38 deg in...

...9) cells/ml. The resultant culture is then frozen and thawed. The liquid fraction is inactivated for 44-50 hr with 0.3-90.4% formalin solution, a 3% aluminum hydroxide...

... concentration of 10% w.r.t. culture volume. In an example, a vaccine sample containing Streptococcus zooepidemicus was cultured for 18-22 hr in a culture medium containing Al(OH)3, formalin...

...frozen for 2 days at -20 deg and thawed at RT. The liquid fraction was inactivated and mixed with an adjuvant. The resultant vaccine was injected i.m into 903 nutrias in 1.0 and 1.5 ml doses, resulting in...
DESCRIPTORS: Streptococcus zooepidemicus cell culture appl. coypu bacterium infection vaccine fermentation nutria mammal animal (Vol.17, No.20)

12/3,K/19 (Item 1 from file: 457)
DIALOG(R)File 457:The Lancet

0000145913

Molecular basis of group A streptococcal virulence
Bisno, A L; Brito, M O; Collins, C M
The Lancet Infectious Diseases vol. 3, 4 PP: 191-200 Apr 2003
DOCUMENT TYPE: PERIODICAL; General Information LANGUAGE: English
RECORD TYPE: New; Fulltext
LENGTH: 10 Pages
WORD COUNT: 10354

Molecular basis of group A streptococcal virulence
TEXT:
The group A streptococcus (GAS) (Streptococcus pyogenes) is among the most common and versatile of human pathogens. It is responsible for...

...complement pathway and thus evade phagocytosis and killing by polymorphonuclear leucocytes. Extracellular toxins, including superantigenic streptococal pyrogenic exotoxins, contribute to tissue invasion and initiate the cytokine storm felt responsible for illnesses such as necrotising fasciitis and the highly lethal streptococcal toxic shock syndrome. Progress has been made in understanding the molecular epidemiology of acute rheumatic...

...goal are being aggressively pursued.
Lancet Infect Dis 2003; 3: 191-200
The group A streptococcus (GAS) (Streptococcus pyogenes) is among the most ubiquitous and versatile of human bacterial pathogens. The litany of...

...five-state laboratory and population-based surveillance study between 1995 and 1999, invasive group A streptococcal infections occurred at a rate of 3?6 per 100 000 population annually in the...

...for pneumonia, necrotising fasciitis, and central nervous system infections exceeded 20%, while the ratio for streptococcal toxic shock syndrome was 44?5%. Equally remarkable is the propensity of GAS to elicit two delayed, non-suppurative sequels: acute rheumatic fever and acute post-streptococcal glomerulonephritis. The former continues to be a leading cause of cardiovascular morbidity and mortality in... antiopsonic surface proteins continue to be described.21 For example, Mac, a secreted group A streptococcal protein with homology to a human beta2 integrin, binds to CD16 on the surface of...
...hyaluronate synthase, hasB codes for UDP-glucose dehydrogenase and hasC encodes UDPglucose pyrophosphorylase.24 However, inactivation of the hasC does not affect capsule production, suggesting that an alternative source of UDP-glucose is available to the bacteria for capsule production.25
Streptococcal strains vary greatly in their degree of encapsulation, and those with the most exuberant capsule...

...causing uncomplicated pharyngitis exhibited a mucoid morphology. By contrast 21% of strains that caused serious streptococcal infections in normally sterile sites and 42% of isolates from rheumatic fever cases were mucoid...

...to oral epithelial cells.35,36 Furthermore, LTA and anti-LTA passively protected mice against streptococcal challenge.37 It has been proposed that LTA serves by hydrophobic interactions as a "first...to both throat and skin. These include protein F1(PrtF1),47 also known as SfbI (streptococcal fibronectin binding proteinI),48 and related proteins known as SbfII,49 FBP54,50 protein F2,51 and PFBP.52 Protein F/SbfI facilitates adherence to respiratory epithelial cells,53 and intranasal vaccination with this protein protected mice from challenge with lethal doses of virulent GAS.54...

...M negatives, even though the protein is apparently not required for initial adherence.

In an animal model of colonisation and infection59 mice inoculated intranasally with an encapsulated GAS strain had more persistent throat colonisation and higher mortality than did those inoculated with an acapsular mutant.

Internalisation

Although GAS are not generally thought of as intracellular pathogens, experiments over the past few years have shown that the microorganisms can penetrate a...

...have been implicated in the internalisation process, which involves cytoskeletal rearrangements and interactions between the streptococcal adhesions, host integrins, and integrin ligands.61,65

The biological significance of intracellular entry by GAS remains to be elucidated. It is possible that such penetration is the prelude to deep tissue invasion. It is, however, equally likely that such entry provides an intraepithelial sanctuary for persistence of the organism sheltered from phagocytes, humoral antibody, and antibiotics such as...

...from biopsies of infected tonsils as well as from surgically removed tonsils of symptom-free streptococcal carriers.66,67

In contrast to M protein and fibronectin-binding proteins, the hyaluronate capsule...

...infection.71 This apparent paradox was clarified when it was seen that binding of the streptococcal capsule to the hyaluronic-acid-binding protein CD44 on human epithelial cells72,73 induces cytoskeletal...

...the microorganisms to remain extracellular as they penetrate the epithelium.74

Extracellular products contributing to streptococcal virulence

GAS elaborate several extracellular products, not all of which have been well characterised. Two distinct haemolysins are elaborated. Streptolysin O (SLO), which derives its name from its oxygen lability, is reversibly inhibited by oxygen...

...lysosomes, and isolated mammalian and amphibian hearts. Moreover, it has recently been shown that another streptococcal cytotoxin, NAD glycohydrolase may be translocated into keratinocytes through SLO-induced membrane pores75 SLO is...

...all GAS strains (as well as many group C and G organisms) and is antigenic.

Streptolysin S (SLS) is a haemolysin produced by streptococci growing in the presence of serum or several other substances such as serum albumin, alpha-lipoprotein, and ribonucleic acid. It exists in intracellular, cell-surface-bound, and extracellular forms and is, by weight, one of the most potent...

...damage the membranes of polymorphonuclear leucocytes, platelets, and subcellular organelles. Unlike SLO, it is not inactivated by oxygen, but it is quite thermolabile. Most GAS strains produce both haemolysins, but an...

...extracellular products may, theoretically, serve to facilitate the liquefaction of pus and the spreading of streptococci through tissue planes that are characteristic of streptococcal cellulitis and necrotising fasciitis. These include: four antigenically distinct enzymes that participate in the degradation...

...D); hyaluronidase, which enzymatically degrades hyaluronic acid present in the ground substance of connective tissue; streptokinase, which

promotes the dissolution of clots by catalysing the conversion of plasminogen to plasmin; streptococcal pyrogenic exotoxin B (Spe B), which is a potent protease; and C5a peptidase, which specifically...
...79 Antibodies to five of the extracellular products have been used in the serodiagnosis of streptococcal infection. These are SLO, anti-DNase B, antihyaluronidase, antinicotinamide adenine dinucleotidase, and antistreptokinase.
Streptococcal inhibitor of complement (Sic) is a secreted protein produced by M1 strains that binds to...

...for efficient internalisation and killing of S pyogenes by PMNs.82
Pyrogenic exotoxins and the streptococcal toxic shock syndrome
The streptococcal pyrogenic exotoxins are a family of bacterial superantigens believed to be associated with streptococcal toxic shock syndrome (STSS). This family includes the bacteriophage encoded SpeA83 and SpeC, historically known...

...identified from genome sequence information. SMEZ-2 is a potent modulator of the T-cell response to S pyogenes.84 SpeL and SpeH are produced by an acute rheumatic fever strain...

...from invasive GAS infections.101 The biological functions of SpeB, as well other group A streptococcal proteinases, including C5A peptidase, and streptokinase, have recently been reviewed.102,103 Streptolysin O,104 lipoteichoic acid and peptidoglycan105 may also stimulate elaboration of cytokines.
nly a small...

...a direct correlation between specific HLA haplotypes and the propensity to develop STSS.108
The streptococcal genome
In little over a year the complete genome sequences from three S pyogenes types...

...since the mid 1980s. This genome information provides insight into the subtle genetic differences between streptococcal serotypes that arm them to produce specific syndromes.
The GAS genomes range in size from..In addition, the pyrogenic exotoxins SpeA, SpeC, SpeH, SpeI, SpeK, SpeL, SpeM, SSA, the DNase streptodornase, mitogenicity factors MF2, MF3 (a putative nuclease), MF4, and SLa, a streptococcal phospholipase, were encoded on the various phage genomes. Insertion sequences account for some genome diversity...

...there are some DNA rearrangements that can be attributed to these sequences.
Genetic regulation of streptococcal virulence factors
Control of the expression of the described virulence factors over time and under...

...helix motifs. Regulation by Mga is responsive to environmental conditions, and Mgadependent expression increases in response to increased carbon dioxide concentrations.56
A second adherence protein, protein F1, is regulated in response to reduced oxygen concentrations (figure 3).119 The protein F1 encoding gene is not regulated...

...system that represses expression of a number of virulence-associated genes including the has operon, streptokinase, the cysteine protease SpeB, SLO, and the CsrRS operon itself. CsrS is the bacterial sensor protein and CsrR is the repressor molecule. Inactivation of these genes results in enhanced virulence in a mouse model. CsrRS regulated genes are...

...indicates that GAS do indeed vary in their rheumatogenic potential.130 Studies of outbreaks of streptococcal pharyngitis show that strains of certain M serotypes are strongly and repetitively associated with ARF131 ...
...Lake City during two periods of peak ARF incidence 12 years apart.111,132

Rheumatogenic streptococcal strains have distinct biologic characteristics. Their M-protein molecules share a particular surface-exposed antigenic domain133 against which ARF patients mount a strong IgG response.134 They do not elaborate alpha-lipoproteinase (so-called serum opacity factor) and they are...

...whereas M-49 is the type most frequently related to pyoderma-associated nephritis. Not all streptococcal strains belonging to these serotypes are nephritogenic, however. There are no reliable biological markers to differentiate nephritogenic from nonnephritogenic streptococci. APSGN is almost always due to strains of serogroup A. There are, however, well-documented outbreaks due to group C organisms.135

The precise mechanism by which streptococcal infection gives ... view that the renal injury is immunologically mediated. Indeed, antigenic similarities between constituents of the streptococcus and the human kidney have been described.136

The identity of the streptococcal constituent or constituents involved in the pathogenesis of APSGN remains unknown. M protein is an...

...M serotype. Indeed, monoclonal antibodies raised against human glomeruli have been seen to crossreact with streptococcal M protein.137 Moreover, in an animal model of nephritis induced by nephritogenic type 12 streptococci, antibodies eluted from the glomerulus were seen to be directed against type 12 M protein but not against other streptococcal and renal antigens.138 Others, however, have described crossreactions between fragments of streptococcal cell membrane and human glomerular basement membrane135 and have produced proliferative glomerular lesions in rhesus monkeys by immunisation with streptococcal membrane fragments or by intravenous injection of antibodies to these fragments.139 Streptococcal pyrogenic exotoxin B (SpeB, streptococcal proteinase) was identified by immunofluorescence in two-thirds of APSGN renal biopsies, and serum titres...

...APSGN patients.141 An apparently identical antigen, found in a water-soluble fraction of nephritogenic streptococci and most likely derived from streptococcal plasma membrane, has been purified and called streptococcal protein preabsorbing antigen.142 Another nephritis-strain-associated protein, initially identified as an extracellular product of nephritogenic streptococci, has been characterised as a streptokinase.143 It is not yet clear whether streptococcal protein preabsorbing antigen and nephritisstrain-associated protein are identical or distinct proteins. Streptokinase production has been postulated to have a role in the pathogenesis of APSGN and, indeed...

...disease in a mouse model.144 However, there is no unique reactivity to group A streptokinase in sera of APSGN patients, nor has streptokinase deposition been shown in biopsy specimens obtained early in the disease.145

Prospects for a group A streptococcal vaccine

The persistence of rheumatic fever in many developing countries of the world, the apparent...

...specific, highly conserved portions of the molecule.148 The route of administration may be by injection or, preferably, by application to

the oropharyngeal mucosa. Limited phase 1 human studies are in...
SIDEBAR:
...Internalisation
M protein
Protein F1
Invasion
Hyaluronic acid capsule
M protein
Spread through tissues
Hyaluronidase
Streptokinase
SpeB (cysteine protease)
DNAses A-D
Systemic toxicity
Streptolysin O
Streptolysin S
Superantigenic exotoxins
*The list is not exhaustive, and additional associations are being reported with...

...and selection criteria
In preparing this paper we reviewed articles in the Medline database for "Streptococcus pyogenes", with special attention to "pathogenesis", "genetics", and "virulence". In addition, we reviewed the bibliographies...
CITED REFERENCES:
...1 O'Brien KL, Beall B, Barrett NL, et al. Epidemiology of invasive group A streptococcus disease in the United States, 1995-1999. Clin Infect Dis 2002; 35: 268-76.
2...

...TM, Seyer JM, Kang AH. Purification and properties of M protein extracted from group A streptococci with pepsin: covalent structure of the amino terminal region of type 24 M antigen. J Exp Med 1977; 145: 1469-83.
3 Fischetti VA. Streptococcal M protein. Sci Am 1991; 264: 58-65.
4 Fischetti VA. Surface proteins on Gram..

...RF, Martin DR, Lovgren M, et al. Extension of the Lancefield classification for group A streptococci by addition of 22 new M protein gene sequence types from clinical isolates: emm103 to...

...Kapur V, Szeto J, Pan X, Swanson DS, Martin DR. Genetic diversity and relationships among Streptococcus pyogenes strains expressing serotype M1 protein: recent intercontinental spread of a subclone causing episodes of...
...Immun 1995; 63: 994-1003.
7 Bisno AL. Alternate complement pathway activation by group A streptococci: role of M-protein. Infect Immun 1979; 26: 1172-76.
8 Horstmann RD, Sievertsen HJ, Knobloch J, Fischetti VA. Antiphagocytic activity of streptococcal M protein: selective binding of complement control protein factor H. Proc Natl Acad Sci USA...

...9 Johnsson E, Berggard K, Kotarsky H, et al. Role of the hypervariable region in streptococcal M proteins: binding of a human complement inhibitor. J Immunol 1998; 161: 4894-901.
10 Kotarsky H, Gustafsson M, Svensson HG, Zipfel PF, Truedsson L, Sjobring U. Group A streptococcal phagocytosis resistance is independent of complement factor H and factor H-like protein 1 binding...

...C4BP to the hypervariable region of M protein: a molecular mechanism of phagocytosis resistance in Streptococcus pyogenes. Mol Microbiol 2001; 42: 539-51.

12 Perez-Caballero D, Alberti S, Vivanco F...

...P, Rodriguez dC. Assessment of the interaction of human complement regulatory proteins with group A streptococcus. Identification of a high-affinity group A streptococcus binding site in FHL-1. Eur J Immunol 2000; 30: 1243-53.

13 Whitnack E, Beachey EH. Inhibition of complement-mediated opsonization and phagocytosis of Streptococcus pyogenes by D fragments of fibrinogen and fibrin bound to cell surface M protein. J...

...Wessels MR. Hyaluronate capsule and surface M protein in resistance to opsonization of group A streptococci. Infect Immun 1996; 64: 1495-501.

15 Bisno AL. Management of streptococcal infections and prevention of rheumatic fever: the changing scene. In: Sande MA, Hudson LD, Root...

...PL. A single emm gene-specific oligonucleotide probe does not recognise all members of the Streptococcus pyogenes M type 1. FEMS Microbiol Lett 1995; 130: 145-50.

17 Musser JM, Kapur...

...Pan X, Swanson DS, Martin DR. Genetic diversity and relationships among serotype M1 strains of Streptococcus pyogenes. Dev Biol Stand 1995; 85: 209-13.

18 de Malmanche SA, Martin DR. Protective immunity to the group A streptococcus may be only strain specific. Med Microbiol Immunol 1994; 183: 299-306.

19 Podbielski A, Schnitzler N, Beyhs P, Boyle MDP. M-related protein (Mrp) contributes to group A streptococcal resistance to phagocytosis by human granulocytes. Mol Microbiol 1996; 19: 429-41.

20 Ji Y...

...M49, Mrp, Enn, and C5a peptidase proteins on colonization of the mouse oral mucosa by Streptococcus pyogenes. Infect Immun 1998; 66: 5399-405.

21 Dale JB, Chiang EY, Liu S, Courtney HS, Hasty DL. New protective antigen of group A streptococci. J Clin Invest 1999; 103: 1261-68.

22 Lei B, DeLeo FR, Hoe NP, et...

...Crater DL, van de Rijn I. Hyaluronic acid synthesis operon (has) expression in group A streptococci. J Biol Chem 1995; 270: 18452-58.

24 Alberti S, Ashbaugh CD, Wessels M. Structure of the has operon promoter and regulation of hyaluronic acid capsule expression in group A Streptococcus. Mol Microbiol 1998; 28: 343-53.

25 Ashbaugh CD, Alberti S, Wessels M. Molecular analysis of the capsule gene region of Group A Streptococcus: the has AB genes are sufficient for capsule expression. J Bacteriol 1998; 180: 4955-59.

26 Whitnack E, Bisno AL, Beachey EH. Hyaluronate capsule prevents attachment of group A streptococci to mouse peritoneal macrophages. Infect Immun 1981; 31: 985-91.

27 Wessels MR, Moses AE, Goldberg JB, DiCesare TJ. Hyaluronic acid capsule is a virulence factor for mucoid group A streptococci. Proc Natl Acad Sci USA 1991; 88: 8317-21.

28 Pilot I. The role of mucoid hemolytic streptococci in rheumatic fever and arthritis. Proceedings of the Central Society for Clinical Research 1944; 17: 70-71.

29 Stollerman GH. The nature of rheumatogenic streptococci. Mt Sinai J Med 1996; 63: 144-58.

30 Johnson DR, Stevens DL, Kaplan EL. Epidemiologic analysis of group A streptococcal serotypes associated with severe systemic infections, rheumatic fever, or uncomplicated pharyngitis. J Infect Dis 1992...

...82.

31 Fillit HM, McCarty M, Blake M. Induction of antibodies to hyaluronic acid by immunization of rabbits with encapsulated streptococci. J Exp Med 1986; 164: 762-76.

32 Fillit HM, Blake M, MacDonald C, McCarty group A streptococcal infections. Clin Microbiol Rev 2000; 13: 470-511.

34 Courtney HS, Hasty DL, Dale JB. Molecular mechanisms of adhesion, colonization, and invasion of group A streptococci. Ann Med 2002; 34: 77-87.

35 Beachey EH, Simpson WA. The adherence of group A streptococci to oropharyngeal cells: the lipoteichoic acid adhesin and fibronectin receptor. Infection 1982; 10: 107-11...

...Ofek I, Beachey EH, Jefferson W, Campbell GL. Cell membrane-binding properties of group A streptococcal lipoteichoic acid. J Exp Med 1975; 187: 1161-67.

37 Dale JB, Baird RW, Courtney HS, Hasty DL, Bronze MS. Passive protection of mice against group A streptococcal pharyngeal infection by lipoteichoic acid. J Infect Dis 1994; 169: 319-23.

38 Hasty DL, Ofek I, Courtney HS, Doyle RJ. Multiple adhesins of streptococci. Infect Immun 1992; 60: 2147-52.

39 Ellen RP, Gibbons RJ. Parameters affecting the adherence and tissue tropisms of Streptococcus pyogenes. Infect Immun 1974; 9: 85-91.

40 Caparon MG, Stephens DS, Olsen A, Scott JR. Role of M protein in adherence of group A streptococci. Infect Immun 1991; 59: 1811-17.

41 Courtney HS, Bronze MS, Dale JB, Hasty DL. Analysis of the role of M24 protein in group A streptococcal adhesion and colonization by use of omega-interposon mutagenesis. Infect Immun 1994; 62: 4868-73...

...SK, Simecka JW, Michalek SM. Role of M protein in pharyngeal colonization by group A streptococci in rats. Infect Immun 1993; 61: 2277-83.

43 Wang JR, Stinson MW. M protein mediates streptococcal adhesion to HEp-2 cells. Infect Immun 1994; 62: 442-48.

44 Courtney HS, Liu S, Dale JB, Hasty DL. Conversion of M serotype 24 of Streptococcus pyogenes to M serotypes 5 and 18: effect on resistance to phagocytosis and adhesion to...

...MG. M protein and protein F act as important determinants of cell-specific tropism of Streptococcus pyogenes in skin tissue. J Clin Invest 1994; 94: 965-77.

46 Okada N, Liszewski...

...cofactor protein (CD46) is a keratinocyte receptor for the M protein of the group A streptococcus. Proc Natl Acad Sci USA 1995; 92: 2489-93.

47 Hanski E, Caparon M. Protein F, a fibronectinbinding protein, is an adhesin of the group A streptococcus Streptococcus pyogenes. Proc Natl Acad Sci USA 1992; 89: 6172-76.

48 Talay SR, Valentin-Weigand P, Jerlstrom PG, Timmis KN, Chhatwal GS. Fibronectin-binding protein of Streptococcus pyogenes: sequence of the binding domain involved in adherence of streptococci to epithelial cells. Infect Immun 1992; 60: 3837-44.

49 Kreikemeyer B, Talay SR, Chhatwal GS. Characterization of a novel fibronectin-binding surface protein in group A streptococci. Mol Microbiol 1995; 17: 137-45.

50 Courtney HS, Dale JB, Hasty DL. Differential effects of the streptococcal fibronectin-binding protein, FBP54, on adhesion of group A streptococci to human buccal cells and HEp-2 tissue culture cells. Infect Immun 1996; 64: 2415...

...Natanson-Yaron S, Caparon MG, Hanski E. Protein F2, a novel fibronectin-binding protein from Streptococcus pyogenes, possesses two binding domains. Mol Microbiol 1996; 21: 373-84.

52 Rocha CL, Fischetti...

...Identification and characterization of a novel fibronectin-binding protein on the surface of group A streptococci. Infect Immun 1999; 67: 2720-28.

53 Hanski E, Horwitz PA, Caparon MG. Expression of protein F, the fibronectin-binding protein of Streptococcus pyogenes JRS4, in heterologous streptococcal and enterococcal strains promotes their adherence to respiratory epithelial cells. Infect Immun 1992; 60: 5119-25.

54 Guzman CA, Talay SR, Molinari G, Medina E, Chhatwal GS. Protective immune response against Streptococcus pyogenes in mice after intranasal vaccination with the fibronectin-binding protein Sfbl. J Infect Dis 1999; 179: 901-6.

55...

...G, Okada N, Geist RT, Hanski E, Caparon M. Regulation of host cell recognition in Streptococcus pyogenes. Dev Biol Stand 1995; 85: 137-44.

56 Caparon MG, Geist RT, Perez-Casal J, Scott JR. Environmental regulation of virulence in group A streptococci: transcription of the gene encoding M protein is stimulated by carbon dioxide. J Bacteriol 1992 ...

...G, Okada N, Geist RT, Hanski E, Caparon M. Regulation of host cell recognition in Streptococcus pyogenes. Dev Biol Stand 1995; 85: 137-44.

58 Ashbaugh CD, Moser TJ, Shearer MH...

...GL, Kennedy RC, Wessels MR. Bacterial determinants of persistent throat colonization and the associated immune response in a primate model of human group A streptococcal pharyngeal infection. Cell Microbiol 2000; 2: 283-92.

59 Wessels MR, Bronze MS. Critical role of the group a streptococcal capsule in pharyngeal colonization and infection in mice. Proc Natl Acad Sci USA 1994; 91: 12238-42.

60 LaPenta D, Rubens C, Chi E, Cleary PP. Group A streptococci efficiently invade human respiratory epithelial cells. Proc Natl Acad Sci USA 1994; 91: 12115-19.

61 Cue D, Dombek PE, Lam H, Cleary PP. Streptococcus pyogenes serotype M1 encodes multiple pathways for entry into human epithelial cells. Infect Immun 1998...

...of adherence to and penetration of a human laryngeal epithelial cell line by group A streptococci of various M protein types. FEMS Immunol Med Microbiol 1999; 23: 195-204.

63 Dombek PE, Cue D, Sedgewick J, et al. Highfrequency intracellular invasion of epithelial cells by serotype M1 group A streptococci: M1 proteinmediated invasion and cytoskeletal rearrangements. Mol Microbiol 1999; 31: 859-70.

64 Molinari G, Talay SR, Valentin-Weigand P, Rohde M, Chhatwal GS. The fibronectin-binding protein of Streptococcus pyogenes, Sfbl, is involved in the internalization of group A streptococci by epithelial cells The fibronectin-binding protein of Streptococcus pyogenes, Sfbl, is involved in the internalization of group A streptococci by epithelial cells. Infect Immun 1997; 65: 1357-63.

65 Ozeri V, Rosenshine I, Mosher DF, Fassler R, Hanski E. Roles of integrins and fibronectin in the entry of Streptococcus pyogenes into ...cells via protein F1. Mol Microbiol 1998; 30: 625-37.

66 Osterlund A, Engstrand L. Intracellular penetration and survival of Streptococcus pyogenes in respiratory epithelial cells in vitro. Acta Otolaryngol 1995; 115: 685-88.

67 Osterlund A, Engstrand L. An intracellular sanctuary for Streptococcus pyogenes in human tonsillar epithelium-studies of

asymptomatic carriers and in vitro cultured biopsies. Acta...

...Eyal O, Sela S. Role of CsrR, hyaluronic acid, and SpeB in the internalization of Streptococcus pyogenes M type 3 strain by epithelial cells. Infect Immun 2002; 70: 462-69.
69 Darmstadt GL, Mentele L, Podbielski A, Rubens CE. Role of group A streptococcal virulence factors in adherence to keratinocytes. Infect Immun 2000; 68: 1215-21.
70 Schrager HM, Rheinwald JG, Wessels MR. Hyaluronic acid capsule and the role of streptococcal entry into keratinocytes in invasive skin infection. J Clin Invest 1996; 98: 1954-58.
71...

...Warren HB, Carey VJ, Wessels MR. Molecular analysis of the role of the group a streptococcal cysteine protease, hyaluronic acid capsule, and M protein in a murine model of human invasive...

...modulates M protein-mediated adherence and acts as a ligand for attachment of group A streptococcus to CD44 on human keratinocytes. J Clin Invest 1998; 101: 1708-16.
73 Cywes C...

...I, Wessels MR. CD44 as a receptor for colonization of the pharynx by group A Streptococcus. J Clin Invest 2000; 106: 995-1002.
74 Cywes C, Wessels MR. Group A streptococcus tissue invasion by CD44-mediated cell signalling. Nature 2001; 414: 648-52.
75 Madden JC...

...DL, Courtney HS. Antibodies against a synthetic peptide of SagA neutralize the cytolytic activity of streptolysin S from group A streptococci. Infect Immun 2002; 70: 2166-70.
77 Carr A, Sledjeski DD, Podbielski A, Boyle MD, Kreikemeyer B. Similarities between complement-mediated and streptolysin S-mediated hemolysis. J Biol Chem 2001; 276: 41790-96.
78 Yinduo J, McLandsborough L, Kondagunta A, Cleary PP. C5a peptidase alters clearance and trafficking of group A streptococci by infected mice. Infect Immun 1996; 64: 503-10.
79 Wexler DE, Chenoweth DE, Cleary PP. Mechanism of action of the group A streptococcal C5a inactivator. Proc Natl Acad Sci USA 1985; 82: 8144-48.
80 Fernie-King BA, Seilly DJ, Davies A, Lachmann PJ. Streptococcal inhibitor of complement inhibits two additional components of the mucosal innate immune system: secretory leukocyte...

...16.
81 Fernie-King BA, Seilly DJ, Willers C, Würzner R, Davies A, Lachmann PJ. Streptococcal inhibitor of complement (SIC) inhibits the membrane attack complex by preventing uptake of C567 onto...

...RM, DeLeo FR, et al. Insight into the molecular basis of pathogen abundance: group A streptococcus inhibitor of complement inhibits bacterial adherence and internalization into human cells. Proc Natl Acad Sci...

...AC, Collins CM, Acharya KR. Structural features of a zinc binding site in the superantigen streptococcal pyrogenic exotoxin A (SpeA1): implications for MHC class II recognition. Protein Sci 2001; 10: 1268-73.
84 Unnikrishnan M, Altmann DM, Proft T, et al. The bacterial superantigen streptococcal mitogenic exotoxin Z is the major immunoactive agent of Streptococcus pyogenes. J Immunol 2002; 169: 2561-69.
85 Smoot LM, McCormick JK, Smoot JC, et...

...Characterization of two novel pyrogenic toxin superantigens made by an acute rheumatic fever clone of Streptococcus pyogenes associated with multiple disease outbreaks. Infect Immun 2002; 70: 7095-104.
86 Papageorgiou AC, Collins CM, Gutman DM, et al. Structural basis for the recognition of superantigen streptococcal pyrogenic exotoxin A (SpeA1) by MHC class II molecules and T-cell receptors. EMBO J...

...87 Roussell A, Anderson BF, Baker HM, Fraser JD, Baker EN. Crystal structure of the streptococcal superantigen Spe C: dimerization and zinc-binding suggest a novel mode of interaction with MHC...

...superantigen structure and activity highlighted by the three-dimensional structures of two new superantigens from Streptococcus pyogenes. J Mol Biol 2000; 299: 157-68.
89 Papageorgiou AC, Acharya KR. Microbial superantigens...

...staphylococcal enterotoxins and their relatives. Science 1990; 248: 705-11.
91 Manders SM. Toxin-mediated streptococcal and staphylococcal disease. J Am Acad Dermatol 1998; 39: 383-98.
92 Bohach GA, Fast DJ, Nelson RD, Schlievert PM. Staphylococcal and streptococcal pyrogenic toxins involved in toxic shock syndrome and related illnesses. CRC Crit Rev Microbiol 1990...

...93 Hauser AR, Stevens DL, Kaplan EL, Schlievert PM. Molecular analysis of pyrogenic exotoxins from Streptococcus pyogenes isolates associated with toxic shock-like syndrome. J Clin Microbiol 1991; 29: 1562-67.
94 Collin M, Olsen A. Effect of SpeB and EndoS from Streptococcus pyogenes on human immunoglobulins. Infect Immun 2001; 69: 7187-89.
95 Kapur V, Majesky MW..

...IL-1beta) precursor to produce active IL-1beta by a conserved extracellular cysteine protease from Streptococcus pyogenes. Proc Natl Acad Sci USA 1993; 90: 7676-80.
96 Herwald H, Collin M, Muller-Esterl W, Bjorck L. Streptococcal cysteine proteinase releases kinins: a novel virulence mechanism. J Exp Med 1996; 184: 665-73...
...activity and histamine release from the human mast cell line HMC-1 stimulated by recombinant streptococcal pyrogenic exotoxin B/ streptococcal cysteine protease. Infect Immun 2002; 70: 3944-47.
98 Lukomski S, Burns EHJ, Wyde PR, et al. Genetic inactivation of an extracellular cysteine protease (SpeB) expressed by Streptococcus pyogenes decreases resistance to phagocytosis and dissemination to organs. Infect Immun 1998; 66: 771-76.
99 Saouda M, Wu W, Conran P, Boyle MD. Streptococcal pyrogenic exotoxin B enhances tissue damage initiated by other Streptococcus pyogenes products. J Infect Dis 2001; 184: 723-31.
100 Kuo CF, Wu JJ, Lin KY, et al. Role of streptococcal pyrogenic exotoxin B in the mouse model of group A streptococcal infection. Infect Immun 1998; 66: 3931-35.
101 Kansal RG, McGeer A, Low DE, Norrby-Teglund A, Kotb M. Inverse relation between disease severity and expression of the streptococcal cysteine protease, SpeB, among clonal M/T1 isolates recovered from invasive group A streptococcal infection cases. Infect Immun 2000; 68: 6362-69.
102 Rasmussen M, Bjorck L. Proteolysis and its regulation at the surface of Streptococcus pyogenes. Mol Microbiol 2002; 43: 537-44.
103 Norrby-Teglund A, Norrby SR, Low DE. The treatment of severe group A streptococcal infections. Curr Infect Dis Rep 2003; 5: 28-37.
104 Hackett SP, Stevens DL. Streptococcal toxic shock syndrome: synthesis of tumor necrosis factor and interleukin-1 by monocytes stimulated with pyrogenic exotoxin A and streptolysin O. J Infect Dis

1992; 165: 879-85.
105 Sriskandan S, Cohen J. Gram-positive...

...Teglund A, Guedez Y, et al. Risk factors in the pathogenesis of invasive group A streptococcal infections: role of protective humoral immunity. Infect Immun 1999; 67: 1871-77.
107 Norrby-Teglund...

...M. Host variation in cytokine responses to superantigens determine the severity of invasive group A streptococcal infection. Eur J Immunol 2000; 30: 3247-55.
108 Kotb M, Norrby-Teglund A, McGeer...

...et al. An immunogenetic and molecular basis for differences in outcomes of invasive group A streptococcal infections. Nat Med 2002; 8: 1398-404.
109 Ferretti JJ, McShan WM, Ajdic D, et al. Complete genome sequence of an M1 strain of Streptococcus pyogenes 1. Proc Natl Acad Sci USA 2001; 98: 4658-63.
110 Beres SB, Sylva GL, Barbian KD, et al. Genome sequence of a serotype M3 strain of group A streptococcus: phage-encoded toxins, the highvirulence phenotype, and clone emergence. Proc Natl Acad Sci USA 2002...

...Gompel JJ, et al. Genome sequence and comparative microarray analysis of serotype M18 group A Streptococcus strains associated with acute rheumatic fever outbreaks. Proc Natl Acad Sci USA 2002; 99: 4668...

...Caparon MG, Scott JR. Mry, a transacting positive regulator of the M protein gene of Streptococcus pyogenes with similarity to the receptor proteins of two-component regulatory systems. J Bacteriol 1991...

...of csrR/csrS, a genetic locus that regulates hyaluronic acid capsule synthesis in group A Streptococcus. Mol Microbiol 1998; 30: 209-19.
115 Federle MJ, McIver KS, Scott JR. A response regulator that represses transcription of several virulence operons in the group A streptococcus. J Bacteriol 1999; 181: 3649-57.
116 Heath A, DiRita VJ, Barg NL, Engleberg NC. A twocomponent regulatory system, CsrR-CsrS, represses expression of three Streptococcus pyogenes virulence factors, hyaluronic acid capsule, streptolysin S, and pyrogenic exotoxin B. Infect Immun 1999; 67: 5298-305.
117 Okada N, Geist RT, Caparon MG. Positive transcriptional control of mry regulates virulence in the group A streptococcus. Mol Microbiol 1993; 7: 893-903.
118 McIver KS, Myles RL. Two DNA-binding domains...

...Hanski E, Caparon M. Adherence and fibrinectin binding are environmentally regulated in the group A streptococci. Mol Microbiol 1993; 9: 1213-22.
120 Fogg GC, Gibson CM, Caparon MG. The identification...

...regulatory component of prtF expression: use of an in-gammadelta- based shuttle mutagenesis strategy in Streptococcus pyogenes. Mol Microbiol 1994; 11: 671-84.
121 Podbielski A, Woischnik M, Leonard BA, Schmidt KH. Characterization of nra, a global negative regulator gene in group A streptococci. Mol Microbiol 1999; 31: 1051-64.
122 Miller AA, Engleberg NC, DiRita VJ. Repression of...

...976-90.
123 Federle MJ, Scott JR. Identification of binding sites for the group A streptococcal global regulator CovR. Mol Microbiol 2002; 43:

1161-72.
124 Graham MR, Smoot LM, Migliaccio CA, et al. Virulence control in group A streptococcus by a two-component gene regulatory system: global expression profiling and in vivo infection modeling...

...al. Rgg influences the expression of multiple regulatory loci to coregulate virulence factor expression in Streptococcus pyogenes. Infect Immun 2002; 70: 762-70.
126 Lyon WR, Gibson CM, Caparon MG. A...

...an rgg-like regulator in the transcription, secretion and processing of the cysteine proteinase of Streptococcus pyogenes. EMBO J 1998; 17: 6263-75.
127 Kreikemeyer B, Boyle MD, Buttaro BA, Heinemann M, Podbielski A. Group A streptococcal growth phase-associated virulence factor regulation by a novel operon (Fas) with homologies to twocomponent...

...128 Li Z, Sledjeski DD, Kreikemeyer B, Podbielski A, Boyle MD. Identification of pel, a Streptococcus pyogenes locus that affects both surface and secreted proteins. J Bacteriol 1999; 181: 6019-27...

...M, Dan-Goor M, Jaffe J, Moses AE, Hanski E. A locus of group A streptococcus involved in invasive disease and DNA transfer. Mol Microbiol 2002; 46: 87-99.
130 Stollerman ...33: 806-14.
131 Bisno AL. The concept of rheumatogenic and non-rheumatogenic group A streptococci. In: Read SE, Zabriskie JB, eds. Streptococcal diseases and the immune response. New York: Academic Press; 1980: 789-803.
132 Smoot JC, Korgenski EK, Daly JA, Veasy LG, Musser JM. Molecular analysis of group A Streptococcus type emm18 isolates temporally associated with acute rheumatic fever outbreaks in Salt Lake City, Utah...

...10.
133 Bessen DE, Fischetti VA. Differentiation between two biologically distinct classes of group A streptococci by limited substitutions of amino acids within the shared region of M protein-like molecules...

...LG, Hill HR, Augustine NH, Fischetti VA. Serologic evidence for a class I group A streptococcal infection among rheumatic fever patients. J Infect Dis 1995; 172: 1608-11.
135 Barnham M, Thornton TJ, Lange K. Nephritis caused by Streptococcus zooepidemicus (Lancefield group C). Lancet 1983; 1: 945-48.
136 Lange CF. Chemistry of cross-reactive fragments of streptococcal cell membrane and human glomerular basement membrane. Transplant Proc 1969; 1: 959-63.
137 Goroncy...

...Dale JB, Beachey EH, Opferkuch W. Monoclonal antibody to human renal glomeruli cross-reacts with streptococcal M protein. Infect Immun 1987; 55: 2416-19.
138 Lindberg LH, Vosti KL. Elution of glomerular bound antibodies in experimental streptococcal glomerulonephritis. Science 1969; 166: 1032-33.
139 Markowitz AS, Horn D, Aseron C, Novak R, Battiforia HA. Streptococcal related glomerulonephritis 3. Glomerulonephritis in rhesus monkeys immunologically induced both actively and passively with a soluble fraction from nephritogenic streptococcal protoplasmic membranes. J Immunol 1971; 107: 504-11.
140 Cu GA, Mezzano S, Bannan JD, Zabriskie JB. Immunohistochemical and serological evidence for the role of streptococcal proteinase in acute poststreptococcal glomerulonephritis. Kidney Int 1999; 54: 819-26.

141 Lange K, Ahmed U, Kleinberger H, Treser G. A hitherto unknown streptococcal antigen and its probable relation to acute poststreptococcal glomerulonephritis. Clin Nephrol 1976; 5: 207-15.
142 Yoshizawa N, Oshima S, Sagel I, Shimizu J, Treser G. Role of a streptococcal antigen in the pathogenesis of acute poststreptococcal glomerulonephritis. J Immunol 1992; 148: 3110-16.
143 Johnson KH, Zabriskie JB. Purification and partial characterization of the nephritis strain-associated protein from Streptococcus pyogenes, group A. J Exp Med 1986; 163: 697-712.
144 Nordstrand A, Norgren M, Ferretti JJ, Holm SE. Streptokinase as a mediator of acute poststreptococcal glomerulonephritis in an experimental mouse model. Infect Immun 1998...

...S, Burgos E, Mahabir R, Kemeny E, Zabriskie JB. Failure to detect unique reactivity to streptococcal streptokinase in either the sera or renal biopsy specimens of patients with acute poststreptococcal glomerulonephritis. Clin Nephrol 1992; 38: 305-10.
146 Dale JB. Multivalent group A streptococcal vaccines. In: Stevens DL, Kaplan EL, eds. Streptococcal infections: clinical aspects, microbiology, and molecular pathogenesis. New York: Oxford University Press, 2000: 390-401...

...Stroop SD, Reddish MA, Beall B, Dale JB. Immunogenicity of a 26-valent group A streptococcal vaccine. Infect Immun 2002; 70: 2171-77.
148 Fischetti VA. Vaccine approaches to protect against group A streptococcal pharyngitis. In: Fischetti VA, et al, eds. Gram-positive pathogens. Washington, DC: American Society for Microbiology, 2000: 96-104.
149 Fischetti VA. Protection against group A streptococcal infection. In: Stevens DL, Kaplan EL, eds. Streptococcal infections: clinical aspects, microbiology, and molecular pathogenesis. New York: Oxford University Press, 2000: 371-89.
THIS IS THE FULL-TEXT.

12/3,K/20 (Item 1 from file: 266)

00736006
IDENTIFYING NO.: 0208943 AGENCY CODE: AGRIC
Acquired immunity or innate resistance; how does the equine uterus eliminate bacteria?
pfge
ASSOCIATE INVESTIGATORS: Causey, R. C.
PERFORMING ORG.: UNIVERSITY OF MAINE, ANIMAL & VETERINARY SCIENCES , ORONO, MAINE 04469

...PERFORMING ORG.: ANIMAL & VETERINARY SCIENCES
...SUMMARY: of this research may therefore be formally stated as follows: 1. To characterize the mucosal response to uterine infection with Streptococcus zooepidemicus. 2. To define the genetic basis of antigenic variation of Streptococcus zooepidemicus . 3. To assess the role of mucociliary currents in protecting the equine endometrium from infection by Streptococcus zooepidemicus. The proposed study consists of inoculating Streptococcus zooepidemicus into the uterus of 5 reproductively healthy mares during over 4 estrous cycles. The study...

... healthy mares which have normal reproductive tracts and have demonstrated the ability to clear a
streptococcal intrauterine inoculum. Prior to each inoculation serum, nasal and uterine washes will be collected for

assessment of Streptococcal specific IgG and IgA. Clearance of streptococci will be assessed by a single quantitative uterine flush culture 12 hours post inoculation. Additional sampling will be performed prior to the first inoculation to more firmly establish a baseline, and after the last inoculation to detect a response arising some weeks after the last infection. Immune responses will be assessed by western blotting and ELISA of collected samples. Over the experimental period, H1 predicts increasing levels of streptococcal IgG and IgA in mucosal washings and progressively lower numbers in uterine flushes following inoculation. Twenty three isolates of Streptococcus zooepidmicus have been typed by Sma I restriction enzyme digestion followed by pulsed-field gel...

...PROGRESS REPORT SUMMARY: SK, Paccamonti DL, Eilts BE, LeBlanc MM, Alteration of the uterine epithelium inchronically infertile mares. Animal Reproduction Science 2009 (underreview) Gores-Lindholm AR, Ahlschwede1 S, Causey RC, Calderwood-Mays M, andLeBlanc MM. Effect of intra -uterine infusion of dilutedN-acetylcysteine on equine endometrium. Proceedings of the AmericanAssociation of Equine Practitioners ...

...Kelley A, Stephenson LA, Cpitz HM, Guilmain S, Timoney JF. Immunisation of theequine uterus against Streptococcus equi subspecies zooepidemicus usingan intranasal attenuated Salmonella vector. 2009 The Veterinary Journal (in press doi:10.1016/j.tvjl.2009.05...

DESCRIPTORS: equine; uterus; infertility; streptococcus; zooepidemicus; muco-ciliary; mucosal immunity; pfge

12/3,K/21 (Item 2 from file: 266)
DIALOG(R)File 266:FEDRIP
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00733702
IDENTIFYING NO.: 0206055 AGENCY CODE: AGRIC
A ZEBRAFISH MODEL OF LANCEFIELD GROUP C STREPTCCCCCAL PATHOGENESIS
group c streptococcus
ASSOCIATE INVESTIGATORS: Maddox, C. W; Pinkerton, M; Borst, L.
PERFORMING ORG.: UNIVERSITY OF ILLINOIS, VETERINARY RESEARCH & EXTENSION , URBANA, ILLINOIS 61801

A ZEBRAFISH MODEL OF LANCEFIELD GROUP C STREPTCCCCCAL PATHOGENESIS
SUMMARY: (1) Determine the LD50 for intramuscular (IM) and intraperitoneal (IP) routes of infection and compare patterns of infection and pathogenesis in zebrafish. (2) Demonstrate a correlation between specific combinations of phenotype and genotype with attenuation in zebrafish. (3) Evaluate the potential for recombination in vivo following co-infection of zebrafish...

... Demonstrate that the BLIS producing S. zoo strain LBC50 and/or its antimicrobial product will attenuate infection with S. equi. We will compare patterns of pathogenesis using H&E stained sections...

...LD50 of one S. zoo and 2 S. equi strains will be determined for both intramuscular (IM) and intraperitoneal (IP) routes of infection using 12 groups of 6 zebrafish per strain. Detection of attenuation in previously characterized laboratory strains of S. equi will be performed using 6 groups of...

...zebrafish. Finally, we will determine if BLIS or a BLIS-producing strain of S. zoo attenuates infection with S. equi following therapeutic treatment of the water or co-infection in groups ...

...be performed.PR the zebrafish host (Danio rario) has been developed. The model successfully detects attenuation in strains of S. equi when injected into the dorsal musculature with approximately 1 million organisms. Survival curves for mock injected controls (saline), wild type (WT) strains and modified live vaccine (VX) strains were compared using Kaplan Meier analysis. A strong affect was observed in fish groups injected with WT and Vx strains versus mock injected controls (chi squared = 21.39, p=0.0009). Comparison of WT to VX strains yielded a statistically significant
increase in median survival time among the VX injected group (Z = -3.173, p=0.00151). Evaluation of survival curves between a strain of Streptococcus equi ssp. zooepidemicus (LBC50) isolated in our laboratory and WT and VX strains was performed. Groups of fish injected with LBC50 had survival curves similar to VX strains with no significant difference observed between median survival times of fish injected with the VX strain or S. zoo, and a similar statistically significant increase in median...

... examination of all groups of fish is in progress; however preliminary data suggests that fish injected with WT strains
demonstrate rapid mobilization of bacteria both via septic spread and direct extension far ahead of the inflammatory response. Incr eased monocyte trafficking with clearly visible intracytoplasmic cocci was frequently observed in the gill vasculature of groups of fish inoculated with WT strains. Monocyte trafficking was not a prominent feature in VX or LBC50 injected groups. In situ hybridization using formalin fixed paraffin imbedded sections of infected zebrafish remains in ...

... in situ PCR to increase target availability and amplify signal. Promising applications of the zebrafish/streptococcal model include high throughput screening for attenuated mutants as possible vaccine candidates and may be instrumental in determining the relative importance of...
DESCRIPTORS: streptococcus equi subsp. equi; streptococcus equi subsp. zooepidemicus; zebrafish; danio rerio; strangles; animal model; group c streptococcus

12/3,K/22 (Item 3 from file: 266)
DIALOG(R)File 266:FEDRIP
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00723681
IDENTIFYING NO.: 0193155 AGENCY CODE: AGRIC
Intranasal Vaccination to Immunize Uterine Mucosae
animal physiology
ASSOCIATE INVESTIGATORS: Causey, R. C.
PERFORMING ORG.: UNIVERSITY OF MAINE, ANIMAL AND VETERINARY SCIENCES, ORONO, MAINE 04469

Intranasal Vaccination to Immunize Uterine Mucosae
...PERFORMING ORG.: ANIMAL AND VETERINARY SCIENCES
...SUMMARY: To characterize uterine, vaginal and nasal antibody responses against Salmonella typhimurium and SzP protein of Streptococcus zooepidemicus MB9, following intranasal vaccination of Salmonella typhimurium expressing MB9 SzP protein. 2. To determine the effect of vaccination on uterine clearance of an intrauterine challenge of Streptococcus zooepidemicus MB9. Seven mares will be vaccinated with Salmonella typhimurium pET20-b/MB9, which expresses the ...

...early summer of the followiing year to boost immunity, sampled to confirm boosting, and then intrauterinely challenged with 10 billion colony forming units of S zooepidemicus MB9. Uterine clearance of the challenge inoculum by the vaccinated mares and the controls will be compared by quantitative cervical culture at 2, 6,12, 48 and 96 hours post inoculation.PR and nasal antibody responses against S typhimurium and SzP protein of S
zooepidemicus MB9, followiing intranasal vaccination of S typhimurium expressing MB9 SzP protein. Significant findings: Vaccinated horses remained normal on...

... to SzP-MB9 were high in serum of all vaccinated horses. Increased post-vaccination uterine response to SzP-MB9 appeared in 3 horses with low
pre-vaccination anti-SzP-MB9 IgA...

... post-vaccination uterine responses were slightly negative. By absorbing out cross-reacting antibodies to other streptococcal strains in sera, we have now been able to detect significant immune respsonses to SzP...

...met and explanation 2. To determine the effect of vaccination on uterine clearance of an intrauterine challenge of S zooepidemicus MB9.
This is the last phase of the project to be completed. The planned trial ...
...PROGRESS REPORT SUMMARY: Weber JA, *Crowley IF, Hornola AD, Opitz HM,Stephenson LA, Guilmain S, Timoney JF (2005) Immunization of the equineuterus using an intranasal attenuated Salmonella vector. (TheVeterinary Journal - under review).Causey R, Artiushin S, Weber J, Opitz M, Crowley I, Hornola A,Stephenson L, Guilmain S, Timoney J. Intranasal Vaccination of Mares toProtect Against Streptococcal Uterine Infections. (Eighth AnnualConference of Vaccine Research, National Foundation of Infectious
Diseases, May 4-6...

... Hornola A,Stephenson L, Guilmain S, Timoney J. The Uterine Mucosal ImmuneResponse in Mares Following Intranasal Vaccination. (Society forTheriogenology Annual Conference August 2004).
DESCRIPTORS: streptococcus zooepidemicus; salmonella typhimurium; uterus; application methods; immunization; mucosa; bacterial diseases (animals); disease control; disease prevention; horses; mares; equines; vagina; respiratory system; immune response; antigen antibody reaction; efficacy; subunit vaccines; clearance rate; animal physiology
? DS

Set	Items	Description
S1	99	E1-E12
S2	3	S1 AND STREP?
S3	57	E1-E12
S4	15	S3 AND CANINE
S5	65	E1-E12
S6	2	S5 AND STREP?
S7	22815	((ZOOEPIDEMICUS AND STREP?) OR (MYCOPLASMA)) AND (ANIMAL OR CANINE OR DOG OR PUP?)
S8	6994	S7 AND (RESPONSE OR INTRA? OR INOCCUL? OR INJECT? OR IMMUNI-Z? OR ADMINS?)
S9	843	S8 AND (INACTIV? OR ATTENUAT? OR WEAK?)
S10	517	RD (unique items)
S11	22	S10 AND (ZOOEPIDEMICUS OR CYNOS)
S12	22	RD (unique items)